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 #201717538077C

<table>
<thead>
<tr>
<th>Employer Name</th>
<th>Jobsite Inspected</th>
<th>Scope of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE UNIVERSITY OF BRITISH COLUMBIA</td>
<td>THUNDERBIRD WINTER SPORTS 6066 THUNDERBIRD BLVD Vancouver BC V6T 2E5</td>
<td>Ammonia Inspection Initiative</td>
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<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>Dec 07, 2017</td>
<td>Mar 08, 2018</td>
<td>Mar 09, 2018</td>
<td></td>
</tr>
</tbody>
</table>

**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>
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<tbody>
<tr>
<td>1</td>
<td>✔️</td>
<td>OHS6.127(2)</td>
</tr>
<tr>
<td>2</td>
<td>✔️</td>
<td>OHS6.128(3)(a)</td>
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<tr>
<td>3</td>
<td>✔️</td>
<td>OHS6.119</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>OHS5.102(b)</td>
</tr>
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<td>5</td>
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<td>OHS5.97(1)</td>
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**Order Status Legend**

<table>
<thead>
<tr>
<th>Order Status</th>
<th>Description</th>
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<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Rescinded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>
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</table>
INSPECTION NOTES

This was a follow-up inspection to authenticate appropriate compliance with the order(s) noted.

On March 8, 2018, WorkSafeBC officer, Yat Chow, conducted a follow-up inspection at the Doug Mitchell Thunderbird Sports Centre. The officer met with a Senior Manager, a Worker Representative and an Occupational Health and Safety Manager.

Current Status

Orders 1, 2 & 3: Complied

The revised ECP included:

- the amount ammonia present and where it was located;
- a section on responsibility of the employer;
- the section on responsibility of a worker include the use person protective equipment and the reporting of unsafe conditions to the supervisor or employer;
- an expansion on risk assessment;
- tasks such as the draining the chiller requires the use of a full-face respirator with ammonia cartrdges;
- documentation requirements;
- the revised ECP was reviewed by the joint committee.

The employer was reminded that the written work procedures must be linked to the exposure control plan and to ensure that the written work procedures and the ECP are consistent (e.g. the use of a half-mask respirator versus the use of a full-face respirator).

Orders 4 & 5: Emergency Response Procedures and Drills

The representatives stated that the draft emergency response plan will be used during the emergency response drill scheduled for March 15, 2018. The emergency response plan will be finalized after the drill. The representatives advised that workers will not be performing spill clean-up, testing and re-entry. Workers will be relying on the direction of a contractor for spill clean-up and the emergency responders (e.g. fire department) for re-entry. The emergency response procedures were reviewed by the joint committee.

The officer will extend the compliance deadline for orders 4 and 5 to March 30, 2018 and the employer is expected will have established a suitable plan to comply with this order.

If any person at this workplace has any questions or requires further information regarding this inspection report, please contact:

Yat Chow
Occupational Hygiene Officer
Email: yat.chow@worksafebc.com
Fax: 604-231-8662
Phone: 604-276-3100 Ext. 6407
Address: PO Box 5350 Stn. Terminal, Vancouver, BC, V6B 5L5
**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*.

### Orders/Items - Full Details

<table>
<thead>
<tr>
<th>Order/Item No</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>✔️</td>
<td>OHS6.127(2)</td>
</tr>
</tbody>
</table>

#### Progress towards compliance:

**Order/Item No.1**

- **Status:** Complied
- **Cited:** OHS6.127(2)

**Progress towards compliance:**

- **Mar 08, 2018** - Compliance achieved. The employer has revised written work procedures such as draining the chillers to include the use of full facepiece respirators fitted with ammonia cartridges.

- **Jan 19, 2018** - As stated in the NOC report, workers requiring to perform hazardous worker procedures on machinery have been provided with full face piece respirators with ammonia cartridges. Further, 6 of 7 workers have been fit tested and 7th worker was expected to be fit tested on January 17, 2018. This officer will confirm compliance at a follow-up inspection.

**Initiating order:**

- **Dec 07, 2017** - The employer and worker representatives stated that currently workers performing a hazardous work procedures on machinery such as draining the oil from the chiller where there is a risk of ammonia gas being released directly into the breathing zone of the worker are not wearing full facepiece respirator fitted with ammonia cartridges. The representatives stated that workers are using half-mask respirators for such a task. Without adequate respiratory protection, eye and face protection while carrying out this job tasks put the worker at serious risk of exposure to ammonia.

This is in contravention of Occupational Health and Safety Regulation Section 6.127(2).

- A worker performing a hazardous work procedure on equipment or machinery where there is the risk of toxic process gas being released directly into the breathing zone, such as cylinder changing, system or line purging or draining, and leak detection and repair, must wear an appropriate respirator.

**Measures to Ensure Compliance:**

- Without undue delay, the employer must ensure workers are wearing at least a fit tested full facepiece respirator equipped with ammonia cartridges when workers are assigned to perform a hazardous work procedure on machinery such as draining oil from the chiller.

Pursuant to section 194 (1) of the Workers Compensation Act, the employer must prepare a Notice of Compliance report. In accordance with section 194 (2), this report must detail what has been done to comply with the order, and where compliance has not been achieved by the time the report has been submitted, include a plan of what will be done to comply and when compliance will be achieved. Please submit the report no later than January 12, 2018.

<table>
<thead>
<tr>
<th>Order/Item No.2</th>
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<tr>
<td>2</td>
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</table>

#### Progress towards compliance:

**Order/Item No.2**

- **Status:** Complied
- **Cited:** OHS6.128(3)(a)

**Progress towards compliance:**

- **Mar 08, 2018** - Compliance achieved. The employer has retained the services of a contractor to perform monthly testing of the ammonia sensors. The officer observed the documentation for the “bump” test from the contractor for January and February 2018.

- **Jan 19, 2018** - As stated in the NOC report, the employer has engaged a third party vendor to validate the proper operation of the ammonia sensors alarms on a monthly basis. The first monthly test was expected the week of January 15, 2018. This officer will confirm compliance at a follow-up inspection.
### Orders/Items - Full Details

<table>
<thead>
<tr>
<th>Order/Item No.3</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Complied</td>
<td>OHS6.119</td>
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</table>

**Initiating order:**
Dec 07, 2017 - The ammonia room ammonia sensor and alarm systems is currently not tested at least monthly for proper operation by authorized personnel.

This is in contravention of the Occupational Health and Safety Regulation Section 6.128(3)(a).

Monitoring and alarm systems must be
(a) tested at least monthly for proper operation by authorized personnel using procedures set out in section 4.3 (2) or other procedures acceptable to the Board.

**Measures to Ensure Compliance:**
Pursuant to section 194 (1) of the Workers Compensation Act, the employer must prepare a Notice of Compliance report. In accordance with section 194 (2), this report must detail what has been done to comply with the order, and where compliance has not been achieved by the time the report has been submitted, include a plan of what will be done to comply and when compliance will be achieved. Please submit the report no later than January 12, 2018.

**Order/Item No.3**
- **Status:** Complied
- **Cited:** OHS6.119

**Progress towards compliance:**
- Mar 08, 2018 - Compliance achieved. The employer has developed an exposure control plan for ammonia meeting the requirements of OHS 5.54.

- Jan 19, 2018 - The employer is working towards compliance. Refer to inspection notes for details.
Orders/Items - Full Details

**Initiating order:**
Dec 07, 2017 - The employer has developed and implemented an Ammonia exposure control plan (ECP). The employer representatives reported that the ECP was not fully compliant and was in the process of reviewing it. Several deficiencies were noted including, but not limited to:
- The ECP did not identify how much ammonia was present and where it was located;
- The ECP did not have sections on responsibility of the employer (e.g. ensure that the ECP is developed and maintained and the joint health and safety committee or worker representative);
- The responsibility of a worker did not include the use person protective equipment and the reporting of unsafe conditions to the supervisor or employer;
- The risk assessment required did not include the circumstances, events, failures or errors that could cause conditions leading to an emergency;
- The risk assessment in the ECP identifies Low, Moderate and High risk activities, but there is no indication as to the frequency and duration of these tasks;
- The ECP identified an exposure limit of 50 ppm (ceiling) in which this value is not identified in the WorkSafeBC's Table of Exposure Limits;
- The procedure to use exterior doors to help ventilate the ammonia plant room circumvents OHS Regulation 6.122(a);
- Information on controls, such as PPE, does not reflect the hazard and level of PPE required (e.g. the use of a half-mask respirator while draining the chiller);
- Requirements for workplace inspections for the system is not identified;
- Record keeping is not identified as a requirement in the documents;
- The representatives were not aware when the ECP was last reviewed in consultation with the joint committee.

The employer has failed to develop an exposure control plan meeting the requirements of section 5.54, and the risk assessment indicates a risk of adverse health effect to workers from exposure to a toxic process gas.

This is in contravention of the Occupational Health and Safety Regulation Section 6.119.

If there is a risk of adverse health effect to workers from exposure to a toxic process gas, based on the risk assessment, the employer must develop and implement an exposure control plan meeting the requirements of section 5.54.

**Measures to Ensure Compliance:**
Pursuant to section 194 (1) of the Workers Compensation Act, the employer must prepare a Notice of Compliance report. In accordance with section 194 (2), this report must detail what has been done to comply with the order, and where compliance has not been achieved by the time the report has been submitted, include a plan of what will be done to comply and when compliance will be achieved. Please submit the report no later than January 12, 2018.

**Orders/Item No.4**
Status: Outstanding
Cited: OHS5.102(b)

**Progress towards compliance:**
Mar 08, 2018 - The employer representatives reported that an ammonia emergency response drill is scheduled for March 15, 2018. As such, this order will be extended until March 30, 2018.

Jan 19, 2018 - The employer is working towards compliance. Refer to inspection notes for details.
Orders/Items - Full Details

Initiating order:
Dec 07, 2017 - The employer has failed to conduct drills to test the adequacy of procedures and to ensure that workers and supervisors are familiar with their roles and responsibilities. The representatives reported that an emergency drill was last held a couple of years ago.

This is in contravention of the Occupational Health and Safety Regulation Section 5.102(b).

The employer must conduct drills to test the adequacy of procedures and to ensure that workers and supervisors are familiar with their roles and responsibilities.

Measures to Ensure Compliance:
Pursuant to section 194 (1) of the Workers Compensation Act, the employer must prepare a Notice of Compliance report. In accordance with section 194 (2), this report must detail what has been done to comply with the order, and where compliance has not been achieved by the time the report has been submitted, include a plan of what will be done to comply and when compliance will be achieved. Please submit the report no later than January 12, 2018.

Order/Item No.5  Status: Outstanding  Cited: OHS5.97(1)

Progress towards compliance:
Mar 08, 2018 - A draft ammonia emergency response plan (ERP) was provided for review. Upon review, the officer noted the following deficiencies in the ERP:
- did not identify the duties and roles of the emergency wardens. For example, the ERP did not identify who was to contact emergency services (fire department);
- did not address the procedures for clean-up and re-entry;
- did not include the notification of adjacent workplaces or residences which may be affected.

The representatives advised that revisions to the ERP will also include lessons learned/recommendations from the ammonia emergency response drill.
Jan 19, 2018 - The employer is working towards compliance. Refer to inspection notes for details.

Initiating order:
Dec 07, 2017 - The employer has developed and implemented Emergency Response Procedures (ERP) for a hazardous materials response. During the review of the procedures, several deficiencies were noted including, but not limited to:
- The ERP did not specifically address an unintended ammonia release;
- The representatives reported that there are 2 muster stations but did not have a procedure to determine the appropriate muster station depending on wind direction (e.g. no wind sock);
- Did not have procedures to check and confirm the safe evacuation of all workers;
- Did not have procedures for spill cleanup, testing and re-entry;
- The emergency plan has not been reviewed annually in consultation with the joint committee.

This is in contravention of the Occupational Health and Safety Regulation Section 5.97(1).

A workplace must have a written emergency plan, appropriate to the hazards of the workplace, that addresses the requirements of sections 5.98 to 5.102.

Measures to Ensure Compliance:
Pursuant to section 194 (1) of the Workers Compensation Act, the employer must prepare a Notice of Compliance report. In accordance with section 194 (2), this report must detail what has been done to comply with the order, and where compliance has not been achieved by the time the report has been submitted, include a plan of what will be done to comply and when compliance will be achieved. Please submit the report no later than January 12, 2018.
<table>
<thead>
<tr>
<th>Employer #</th>
<th>Mailing Address</th>
<th>Classification Unit #</th>
<th>Operating Location</th>
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<tbody>
<tr>
<td>11284</td>
<td>C/O WCB CLAIMS ADMINISTRATOR HUMAN RESOURCES 6TH FLOOR 6190 AGRONOMY RD VANCOUVER BC V6T 1Z3</td>
<td>765010</td>
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<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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<th>Worker Representative Present During Inspection</th>
<th>Labour Organizations &amp; Local</th>
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<tbody>
<tr>
<td></td>
<td>Barry Eccleton</td>
<td>Jeff Harley</td>
<td>CUPE 116</td>
</tr>
<tr>
<td></td>
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<td>CUPE 2950</td>
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<table>
<thead>
<tr>
<th>WorkSafeBC Officer Conducting Inspection</th>
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</thead>
<tbody>
<tr>
<td>Yat Chow</td>
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<table>
<thead>
<tr>
<th>*Inspection Time</th>
<th>*Travel Time</th>
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<tbody>
<tr>
<td>1.25 hrs</td>
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*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.

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.