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.

A revised version of the *Workers Compensation Act* took effect on April 6, 2020. The B.C. government’s revisions aim to make the Act easier to read and understand, and to reorganize the numbering to make laws easier to find. The revisions make no changes to B.C.’s laws concerning workers’ compensation, occupational health and safety, and employers’ assessment premiums. Please be aware there may be a transitional period where correspondence from WorkSafeBC may include references to either the previous Act or the revised Act. For more information, visit www.worksafebc.com/WCA2019 or call the Prevention Information Line at 604.276.3100, or toll free within BC at 1.888.621.7233 (SAFE).

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**Inspection Report #202217748019A**

<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>C/O WCB CLAIMS ADMINISTRATOR HUMAN RESOURCES VANCOUVER BC V6T 1Z3</td>
<td>Consultation on Variance Process</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 04, 2022</td>
<td>Mar 04, 2022</td>
<td>Mar 17, 2022</td>
<td>Email</td>
</tr>
</tbody>
</table>

**THERE ARE ZERO (0) ORDERS OR OTHER ITEMS OUTSTANDING**

**ACTION MAY STILL BE NECESSARY TO ENSURE COMPLIANCE**

**PLEASE READ FULL REPORT**
INSPECTION NOTES

On Thursday February 17, 2022, a virtual meeting was conducted with an employer representative for this workplace pertaining to matters of compliance with the Occupational Health and Safety Regulation (the Regulation) and the Workers Compensation Act (the Act). The scope of the meeting was to provide a consultation for the employer on the variance process and how it might apply to a capital project that the employer has stated is in the design stage. The purpose of this inspection report is to provide a written summary of the consultation meeting.

A) BACKGROUND

The employer is in the design stage of a large capital project to construct a new chemistry teaching and research building. As part of the project the employer is exploring the possibility of utilizing ductless re-circulating fume hood units instead of fume hoods attached to ducting system that would discharge air to outdoor locations.

The employer described two scenarios within the project where they may be looking to use the ductless re-circulating fume hoods:

1. Within temporary swing spaces to be used by faculty and students in laboratories while the new building is under construction.
2. Within the new building upon completion of the project in select applications in a number of laboratory locations.

The employer has estimated the number of ductless re-circulating fume hoods potentially to be used in the new building to be in the hundreds.

The employer has provided the following reasons for exploring the use of ductless re-circulating fume hoods:

- Reduced energy usage / reduced environmental impact - as there will be hundreds of fume hoods in the proposed new Chemistry building the employer is looking for ways to reduce energy consumption and to support improved sustainability.

- Portability/flexibility – allows flexible room planning and could enable an increase in critical swing space options for teaching labs during phased construction of the new building.

- Lower capital costs due to no HVAC work.

B) VARIANCE PROCESS

Section 30.11 of the Regulation states the following in regards to exhausting of laboratory fume hoods:

30.11 Exhaust discharge

Laboratory fume hood local exhaust ventilation systems must discharge to the atmosphere in such a manner that the discharged air will not be recirculated into the laboratory or other work areas.

As ductless re-circulating fume hoods are not permitted under the above section of the Regulation the employer is requesting information on the variance process and how it may apply to this situation. Note that additional sections under Part 5 of the Regulation may also apply which are discussed further below.
The discussion is summarized into three topics for the employer's consideration.

**WorkSafeBC Policy Regarding a Variance**

The Occupational Health and Safety Regulation contains legal requirements that must be met at all workplaces under the inspectional jurisdiction of WorkSafeBC. On rare occasion, an employer may not be able to comply with a particular regulatory requirement in certain workplaces or while conducting certain work processes. A variance from the requirements of the Regulation is an exceptional exercise of authority, and requires that the proposed alternative ensures worker health and safety by providing protection for workers **equal to or greater than** the protection established by the provision to be varied, or by **having substantially the same purpose and effect** as the provision to be varied.

A variance is always time limited, generally for three years or less. Each request is considered independently, and a prior variance does not guarantee the issuance of any subsequent variance.

The employer would need to consider the above information for any variance application associated with this project and how it would impact the planning and decision making process considering their long term projected plan for the use of ductless re-circulating fume hoods in introductory teaching labs. within the project.

It was discussed during the consultation that the granting of a variance for the use of ductless re-circulating fume hoods for other employers in BC has been rare.

**Engineering Considerations**

The employer should consider the following information in regards to engineering and industrial ventilation that would factor into a variance decision for ductless re-circulating fume hoods:

1. Ductless re-circulating fume hoods are currently not recognized by the Canadian Standards Association as a suitable substitute for ducted chemical fume hoods.

2. Ducted systems ensure contaminants do not re-enter the workplace from the fume hood as the exhaust air is always discharged out of the workplace to the outdoors. A ductless re-circulating fume hood cannot reach this efficiency level due to the fact that ductless re-circulating fume hoods are designed to allow air to re-circulate into the workplace through filters with limitations on their efficacy.

3. Ductless re-circulating fume hoods are dependent on the efficacy of filters to protect the user and building occupants. In the event of a filter failure the contaminants are re-circulated into the workplace.

4. Ductless re-circulating fume hood filters are selected on the basis of normal use, however in the event of a large spill or event within the fume hood the filters can be overwhelmed, resulting in contaminants being re-circulated into the workplace.

5. Chemical filters are effective at adsorbing vapours and gases however they are known to desorb chemicals as well. In other words, the chemicals trapped by the filters have a tendency to be slowly released back into the workplace thereby compromising air quality.

6. Ductless re-circulating fume hoods would require more monitoring and maintenance than standard hoods and are thus more prone to human error. There is likely no reliable monitoring method in determining the effectiveness of the filter over time, particularly for 100% efficiency in removing air contaminants. Ductless re-circulating fume hoods would also need to be inspected after a filter change prior to use.

7. Ductless re-circulating fume hoods may not meet the regulatory requirement for minimum face velocity. In addition, if filters become overloaded with particulate this can also result in a reduced flow, and compromise the safety of the hood.
8. Different chemicals may require different filtration methods. Since these ductless re-circulating fume hoods are intended for teaching and class exercises, various chemicals will be processed within. Different filters or filtration methods may be required to deal with the chemical. The changes, testing, monitoring, inspection, and maintenance will substantially increase the risk of error and can lead to leaks or malfunction.

9. Energy saving by using ductless re-circulating fume hoods may not be realized due to that ventilation will still be required for the lab. And because of the potential of spreading air contaminants into other occupied areas other than the lab, the lab would likely be required to have its own dedicated ventilation system.

Occupation Hygiene Considerations

The employer should consider the following information in regards to occupational hygiene including applicable sections of the Regulation that would factor into a variance decision for ductless re-circulating fume hoods:

1. There is the potential for a large variety of chemicals to be used in teaching environments in a university setting, and new chemicals are being introduced to workplaces and academic environments on a regular basis. The filters for ductless re-circulating fume hoods are considered effective for only a limited number of chemicals. As there is the potential for curriculum changes in the 1st and 2nd year chemistry labs and therefore the introduction of new chemicals, ductless re-circulating fume hoods may not offer adequate protection. A standard chemical fume hood attached to a ducting system, on the other hand, will accommodate almost any change in chemicals being used.

2. In addition to section 30.11 of the Regulation which does not permit the re-circulation of air from a fume hood into the workplace, section 5.70 of the Regulation also prohibits the re-circulation of a number of specific contaminants back in to the workplace from any industrial ventilation system. This includes substances and chemicals identified as designated substances under section 5.57 of the Regulation. Any variance application would need to consider exactly which chemicals may be used within a ductless re-circulating fume hood, including any chemical products of experiments within the hood in order to anticipate if any designated substances are likely to be re-circulated. The higher the potential for one or more designated substances to be used within the fume hood, the greater the risk in the substances being re-circulated in comparison to a ducted fume hood that directs all discharged air to the outdoors.

3. Even if the employer does not currently anticipate any designated substances to be used within the ductless re-circulating fume hood at this time, any change in the types of chemicals used within a fume hood that have the potential to be designated substances (including products from experiments) would likely violate the conditions of a variance and render the employer in non-compliance. This would also include accidental re-circulation of a designated substance. Chemical substances are reviewed on a regular basis by WorkSafeBC and there is the potential for new substances to be considered designated substances in the future.

C) ADDITIONAL INFORMATION

The above information is intended to assist the employer in their planning and decision making for their capital project. If any additional information on the variance process is required the employer may contact WorkSafeBC.

D) CONTACT

If there are any questions regarding the items noted in this inspection report, please contact:

Jonathan Truefitt, B.Sc., CIH, ROH - Occupational Hygiene Officer - WorkSafeBC
E-mail: jonathan.truefitt@worksafebc.com
Mail: P.O. Box 5350 Stn. Terminal, Vancouver, B.C. V6B 5L5
Phone: 604.244.6486 Fax: 604.232.1558

For more information on occupational health and safety, visit: www.worksafebc.com
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>WCA60(1)</td>
<td>On application, the Board may, by order, authorize a variance from a provision of the regulations. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
</tr>
<tr>
<td>WCA60(2)</td>
<td>A variance order may be made only if the Board is satisfied that the variance (a) affords protection for workers equal to or greater than the protection established by the provision being varied, or (b) has substantially the same purpose and effect as the provision being varied. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
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<td>OHS30.11</td>
<td>Laboratory fume hood local exhaust ventilation systems must discharge to the atmosphere in such a manner that the discharged air will not be recirculated into the laboratory or other work areas. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
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<tr>
<td>OHS5.70(1)</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. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
</tr>
<tr>
<td>OHS5.57(1)(a)</td>
<td>If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers: (a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen; (b) ACGIH reproductive toxin; (c) ACGIH sensitizer; (d) ACGIH L endnote. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
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<td>OHS5.57(1)(b)</td>
<td>If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers: (a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen; (b) ACGIH reproductive toxin; (c) ACGIH sensitizer; (d) ACGIH L endnote. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
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<td>OHS5.57(1)(c)</td>
<td>If a substance identified as any of the following is present in the workplace, the employer must replace it, if practicable, with a material which reduces the risk to workers: (a) ACGIH A1 or A2, or IARC 1, 2A or 2B carcinogen; (b) ACGIH reproductive toxin; (c) ACGIH sensitizer; (d) ACGIH L endnote. Referenced in regards to information on the variance process and ductless re-circulating fume hoods.</td>
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</tr>
</tbody>
</table>
Lab Samples Taken | Direct Readings | Results Presented | Sampling Inspection(s) | Workers onsite during Inspection | Notice of Project Number
---|---|---|---|---|---
N | N | N | | 1 | 

Inspection Report Delivered To | Employer Representative Present During Inspection | Worker Representative Present During Inspection | Labour Organization & Local
---|---|---|---
Jennifer Lippa | Jennifer Lippa | Not Applicable | BCGEU, CUPE Locals 2950, 116, 2278, AAPS, IUOE

WorkSafeBC Officer Conducting Inspection
Jonathan Truefitt

*Inspection Time | *Travel Time
---|---
7.75 hrs | 0.00 hrs

*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.

Request a 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 Office at 1-800-925-2233.

To submit a request online, visit https://www.worksafebc.com/en/review-appeal/submit-request

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