THE UNIVERSITY OF BRITISH COLUMBIA

# Extreme Heat Policy

The University of British Columbia
Department of Chemistry
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## What is the purpose of this policy?

This policy will provide faculty, students, staff, and managers with information about how the department will respond to extreme heat events, when temperatures in some areas of some buildings become hot enough to significantly affect workers. The primary goal is to prevent heat stress from affecting members of the department, and as well to prevent accidents that could be caused when temperatures are high.

## What is Heat Stress?

Heat stress occurs when a person's body is not able to regulate temperature, which is normally accomplished by sweating, either because the environment is too hot for sweating to be effective, or because the person is too dehydrated. There are four stages of heat stress. Workers should be aware of these symptoms and watch for the symptoms occurring in themselves or their coworkers:

| | |
|---|---|
| Heat stress | Excessive sweating, dizziness, nausea |
| Heat Cramps | Painful muscle cramps |
| Heat Exhaustion | Shallow breathing, weak and rapid pulse, cool, pale and clammy skin, weakness, fatigue, dizziness, headache and nausea, fainting |
| Heat Stroke | Hot, dry, flushed skin, no longer sweating, agitation, confusion; decreased consciousness and awareness, seizures, irregular pulse, shock, cardiac arrest |

Heat stress can occur at lower temperatures, but at temperatures above 35 °C the risk of heat stress is high, even for people not exerting themselves.

## What are requirements mandated by WorkSafe BC?

WorkSafe and other workplace safety organizations do not specify a maximum safe temperature that workers can be exposed to. They do mandate employers to take the following steps to reduce the risk of heat stress affecting employees:

1. Eliminate the sources of heat
    a. In the case of hot weather, it is not possible, in most areas of the department, to eliminate the source of heat
2. Apply Engineering Controls
    a. Install air conditioning and improve ventilation
    b. Install window shades and other shelters from direct solar radiation
    c. Turn off heat generating equipment
3. Apply Administrative Controls
    a. Schedule work so that physically demanding tasks are done when the temperatures are lowest.
    b. Allow remote work if employees have access to cooler working areas

c. Allow workers to shift hours to earlier times when temperatures are lowest
d. Provide water for drinking
e. Allow frequent rest breaks in cooler areas
f. Check in on workers who work alone

## Extreme heat and the Department of Chemistry

Considerations specific to work in the Chemistry buildings:

- Most of the chemistry buildings are not air conditioned.
- Many workers are required to wear multiple layers of PPE which reduces the ability of the body to cool itself;
- Researchers work with chemicals that have increased risks when being handled at high temperatures (e.g., dichloromethane and diethyl ether boil at 39.6 and 34.6 °C, respectively);
- Researchers work with equipment and chemicals that have higher operating temperature than the external environment (e.g., inert atmosphere gloveboxes have an internal temperature roughly 5 °C higher than the ambient room temperature);
- Staff performing glass blowing, welding or who are working outside in direct sun are at increased risk of heat exposure.

## UBC Chemistry - Heat Stress Exposure Plan

When outside temperatures on campus exceed 30 °C and/or the humidex exceeds 40 °C, there may exist unsafe conditions within chemistry buildings in which workers are at an unacceptable risk of heat stress. In such cases, it is recommended that the Head of Department provide specific guidance to faculty, managers, staff, researchers and students. Otherwise, it is the responsibility of supervisors and workers to identify when a workplace is no longer safe. The table below provides guidelines for supervisors and workers:

| Temperature | Action | Who |
|---|---|---|
| Forecast high >24 °C or Humidex > 30 °C | Assess whether administrative controls should be put in place. | Supervisors and Managers |
| | Watch for signs of heat stress, take rests frequently, if possible in a cooler area. | Everyone |
| Forecast high >28 °C or Humidex > 35 °C | Implement administrative controls including remote work, shifted hours, defer physically demanding jobs. | Supervisors and Managers |
| | Watch for signs of heat stress. | Everyone |
| Forecast high > 30 °C or Humidex > 40 °C | Assess whether supervised area is safe to operate, close area for the day if not. Notify department admin and head of decision to close. | Supervisors |
| | If working, do not work alone. Monitor for signs of heat stress. | Everyone |
| | In consultation with staff and the Director of Finance and Operations, determine whether work area is safe to operate. If not safe, notify customers and staff of closure. | Managers |

## References

General Information:
https://srs.ubc.ca/health-safety/occupational-hygiene/thermal-stress-safety/#What%20causes%20heat%20stress?
https://www.worksafebc.com/en/health-safety/hazards-exposures/heat-stress?origin=s&returnurl=https%3A%2F%2Fwww.worksafebc.com%2Fen%2Fsearch%23sort%3DRelevancy%26q%3Dheat%2520stress%26f%3Alanguage-facet%3D%5BEnglish%5D

Humidex Websites:
https://www.ccohs.ca/oshanswers/phys_agents/humidex.html
http://www.csgnetwork.com/canhumidexcalc.html
https://vancouver.weatherstats.ca/charts/relative_humidity-monthly.html

Max Temperature Website:
https://www.ccohs.ca/oshanswers/phys_agents/max_temp.html