Heat Stress Hazard Assessment and Control

BRIEF

Policy Summary

Lawrence Berkeley National Laboratory’s (Berkeley Lab’s) Heat Stress Policy addresses the hazards of heat stress at the Laboratory site by:

- Listing the different symptoms of heat exhaustion and heatstroke.
- Identifying emergency response actions when someone is determined to be suffering from heat stress.
- Providing preventative measures to avoid heat stress.

Who Should Read This Policy

All Berkeley Lab employees, casual and participating visitors, affiliates, and subcontractors

To Read the Full Policy, Go To:

The POLICY tab on this wiki page

To Read the ES&H Program Details, Go To:

http://www.lbl.gov/ehs/pub3000/CH40.html

Contact Information

Heat Stress Subject Matter Expert
Environment, Health, and Safety Division

POLICY

A. Purpose

Lawrence Berkeley National Laboratory’s (Berkeley Lab’s) Heat Stress Policy addresses the hazards of heat stress at the Laboratory site by:

- Listing the different symptoms of heat exhaustion and heatstroke.
- Identifying emergency response actions when someone is determined to be suffering from heat stress.
- Providing preventative measures to avoid heat stress.

B. Persons Affected

All Berkeley Lab employees, casual and participating visitors, affiliates, and subcontractors
C. Exceptions

None

D. Policy Statement

1. Heat stress — the physical stress of hot environments — can be influenced by a combination of factors, such as the type of clothing worn, physical activity, time spent working, breaks between work activities, and medications; and environmental factors, such as ambient air temperature, air velocity, and relative humidity (Work Process A).

2. Self-awareness is a key step to reducing heat-related disorders. Employees and supervisors should terminate exposure to heat stress at the onset of the first symptoms (Work Process A).

3. When interior temperatures exceed the recommended guidance range of 65°F to 85°F, division directors, unit heads, and supervisors should use their discretion in modifying employee work assignments, including changes in location, changes in time of the beginning or end of the workday, sharing duties, etc. Line managers should consider employee medical and physical conditions when applying this temperature range as a guideline (Work Process C).

4. Heat-related disorders can be caused by prolonged periods of heat stress. Heat exhaustion occurs when the body's ability to regulate body temperature is overwhelmed but not completely broken down. Heatstroke is a life-threatening emergency that requires immediate medical attention. Heatstroke is more likely to occur in outdoor work (Work Process D).

E. Roles and Responsibilities

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibilities</th>
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</table>
| All Berkeley Lab supervisors and building managers | • Arrange first-aid training for workers.  
• Monitor the workplace to determine when hot conditions arise.  
• Whenever possible, schedule hot jobs for the cooler part of the day.  
• Ensure workers drink enough water.  
• Adjust work practices as necessary when workers experience heat stress.  
• Make adjustments for workers who must wear personal protective clothing and equipment that retains heat and restricts evaporation of sweat. |
| Workers                                   | • Follow instructions and training for controlling heat stress.  
• Recognize the potential for heat stress in the work environment.  
• Avoid consumption of excessive caffeine, which can contribute to heat stress.  
• Drink small amounts of water regularly to avoid dehydration.  
• Use personal protective equipment (PPE) appropriately. |
| Facilities Division — Inspection Group    | Issues Stop Work notices to contractors in noncompliance with the Berkeley Lab heat stress program.                                                   |
| Facilities Division — Maintenance and Operations (M&O) | • Provides fans and other means to increase airflow or ventilation in hot work areas.  
• Audits work performed by contractors to ensure compliance. Informs the Inspection Group of noncompliance. |
| Industrial Hygiene Group                  | • Provides project-specific guidance and recommendations.  
• Helps managers determine an appropriate work/rest regime for workers. |

F. Definitions/Acronyms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>Action Level</td>
<td>Level of concern where a corrective action is taken</td>
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<tr>
<td>Contractor</td>
<td>A contractor employed by Berkeley Lab. Both the contractor and the work crew will be non-Berkeley Lab employees.</td>
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<tr>
<td>PPE (personal protective equipment)</td>
<td>Safety equipment worn by employees; may include safety glasses, respirators, coveralls, gloves, etc.</td>
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<tr>
<td>Thermal Radiation</td>
<td>Transfer of heat from hot objects through air to the body. Working around heat sources, such as furnaces, will increase heat stress. Working in direct sunlight can substantially increase heat stress.</td>
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</table>
High Humidity

A condition under which the rate of evaporation of sweat from the skin decreases. If the air temperature is as warm as or warmer than the skin during times of high humidity, blood brought to the body’s surface cannot dissipate heat.

Wet Bulb Globe Temperature Index (WBGT)

The most-used technique to measure environmental factors that most nearly correlate with deep body temperature and other physiological responses to heat.

G. Recordkeeping Requirements

None

H. Implementing Documents

<table>
<thead>
<tr>
<th>Document number</th>
<th>PUB-3000 Reference</th>
<th>Title</th>
<th>Type</th>
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<tbody>
<tr>
<td>07.07.016.001</td>
<td>Chapter 40</td>
<td>Heat Stress</td>
<td>Program</td>
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<tr>
<td>07.07.016.003</td>
<td>Chapter 40, Work Process B</td>
<td>Control of Heat Stress</td>
<td>Work Process</td>
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<td>07.07.016.004</td>
<td>Chapter 40, Work Process C</td>
<td>Heat Stress Screening Threshold</td>
<td>Work Process</td>
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<td>07.07.016.005</td>
<td>Chapter 40, Work Process D</td>
<td>Heat Stress Emergencies</td>
<td>Work Process</td>
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I. Contact Information

Heat Stress Subject Matter Expert
Environment, Health, and Safety (EHS) Division

J. Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>By Whom</th>
<th>Revision Description</th>
<th>Section(s) Affected</th>
<th>Change Type</th>
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<td>1/2/2012</td>
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<td>Toor</td>
<td>Rewrite for wiki (brief)</td>
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<td>8/7/2014</td>
<td>1</td>
<td>Young</td>
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<td>11/12/2014</td>
<td>1.1</td>
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<tr>
<td>12/4/2018</td>
<td>1.2</td>
<td>J. Zhu</td>
<td>Change ACGIH reference to 2016</td>
<td>Driving Requirements</td>
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Document Information

DOCUMENT INFORMATION

Title: Heat Stress Hazard Assessment and Control
Document number: 07.07.016.000
Revision number: 1.2
Publication date: 1/16/2019
Effective date: 5/20/2011
Next review date: 1/16/2025
Policy Area: Industrial Hygiene and Safety
RPM Section (home): ESH
RPM Section (cross-reference): none
Functional Division: EHS
Prior reference information (optional):
• 29 CFR 1910.132(d), *Hazard Assessment and Equipment Selection*
• General Duty Clause, Section 5(a)(1), *Occupational Safety and Health Act (OSHA) of 1970*
• ACGIH 2016 TLVs and BEIs, *Physical Agents, Heat Stress and Strain*

### Implementing Documents

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