Intro to the Zoom Platform

- Online
  - Controls at the bottom
  - Interpreter Channel or Globe Icon (EN or ES)
  - Q&A feature/tool: technical questions regarding presentation
  - Raise Hand Option: for live questions at the end of the presentation

- Phone
  - To raise/lower hand use *9
  - To mute/unmute use *6

NOTE: Speakers will be speaking slowly because of concurrent interpretation. Please be patient.

Outdoor Heat Exposure Virtual Stakeholder Meeting

August 4, 2022

Heat exposure rules have generated significant public interest with recent high temperatures across Washington. Today's stakeholder meeting, which is open to the public, will also be streamed live on TVW at tvw.org.

Outdoor Heat Exposure Virtual Stakeholder Meeting

August 4, 2022

Teri Neely, Technical Services Safety Program Manager
Bradley Farrar, Technical Specialist
Laura Rascón Padilla, Technical Specialist

Carmyn Shute, Administrative Regulations Analyst/Project Manager

Washington State Department of
Labor & Industries

L&I Rulemaking – Outdoor Heat

- **Ongoing development of a permanent rule for outdoor heat**
  - Continued research.
  - Considering appropriate options to protect workers that are evidence-based, feasible, and the least burdensome on employers.

- Emergency rule 2022 – Currently in effect until September 29

More Information - Rulemaking Timeline

What you can expect & when

- **June 1, 2022,**
  - L&I adopted an outdoor heat emergency rule which will last through **September 29, 2022.**
  - If you have feedback on draft emergency rule, please let us know
- **Additional stakeholder meeting over the coming months**

Ambient Heat Exposure Permanent Rulemaking

- Chapter 296-62 WAC General Occupational Health Standards
- Chapter 296-307 WAC, Part G-1 Agriculture Safety Standards

- We are reviewing:
  - ✓ Trigger temperatures
  - ✓ Other measures of environmental conditions
  - ✓ Time frame for when the rule is in effect
  - ✓ Preventative measures – water, shade or other cooling means, rest/time breaks
  - ✓ Emergency response measures
  - ✓ Training and planning
  - ✓ Outdoor and indoor heat exposure
  - ✓ Acclimatization

Today's Discussion Topics

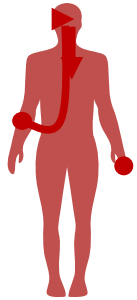
Outdoor heat exposure – Draft

1. Review background on outdoor heat hazards.
2. Draft topics:
    - Timeframe when rule is in effect
    - Trigger temperatures
    - Acclimatization
    - High heat temperature and work/rest cycles

A little background on the hazard of ambient heat

Extensive hazard information presented at previous stakeholder meetings

Heat stress = environment + workload + clothing → **heat strain** → **HRI**



HRI = heat-related illness

Images c/o Stacey Holland, Elizabeth Scott, & https://deohs.washington.edu/pnash/heat_illness

How does clothing affect heat stress?

- The amount of evaporative cooling depends on the humidity, air motion, and breathability of clothing

- **Less breathable clothing raises the effective heat exposure**

Type of Clothing	Amount added to environmental (wet-bulb globe temperature [WBGT]) measurement when determining heat stress
Normal work clothes	0
Double layer clothing	5.4°F (3°C)
Vapor-barrier coveralls	19.8°F (11°C)

Table adapted by OSHA from TLVs® and BEIs®. Thermal stress: heat stress and heat strain. (ACGIH, 2017)

How does workload affect heat stress?

- Muscles are only ~20% efficient, with ~80% of expended energy released as heat *(Sawka et al 2011)*
- **Work duration (how long) & intensity (how hard) determine the amount of metabolic heat generated from work**

Level of Workload	Examples, from https://www.osha.gov/heat-exposure/hazards *Note: Different ways of doing the same task may lead to different wattages*	Metabolic Rate (Watts)
Rest	Sitting	115
Light	Sitting with minimal arm/hand work, stooping, standing watch	180
Moderate	Pushing/pulling light carts, picking fruit/vegetables	300
Heavy	Carrying loads, stacking lumber, landscaping, mixing cement	415
Very heavy	Sledgehammer use, stacking concrete, intense shoveling or digging	520

Approaches to reduce heat stress exposure

Heat stress = environment + workload + clothing

Examples:	*Examples:*	*Example:*
Reduce air temperature, reduce sun exposure	*Reduce work intensity, provide breaks*	*Change to more breathable clothing*

Images c/o Stacey Holland & https://deohs.washington.edu/pnash/heat_illness

HRI cases & environmental conditions

- The maximum daytime temperature was **below the current WA heat rule threshold (89°F) for 45%** of accepted WA HRI worker's compensation claims, indoor & outdoor, 2006-2017

- **Heat stress was below a heat index 89°F* in 32%** of 25 US Occupational Safety & Health Administration (OSHA) outdoor HRI investigation cases, 2011-2016

**Equivalent to air temperature 89°F @ 40% relative humidity*

Hesketh et al 2020; Tustin et al 2018

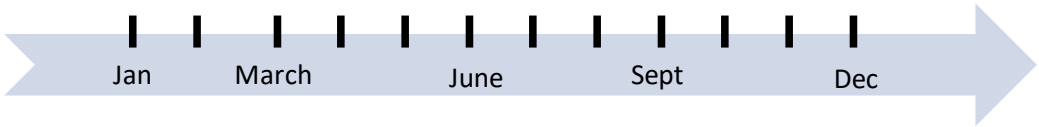
Rule Timeframe

Existing Rule

Annually
May 1 – September 30

Draft

No timeframe restriction.
Year-round, when exposed to outdoor heat.



Trigger Temperatures

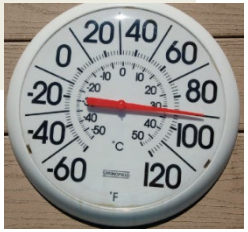


Photo by Tom Magliery in Creative Commons

Existing Rule & 2022 Emergency Rule

Table 1.

52°F	Non-breathable clothing
77°F	Double-layer woven clothing
89°F	All other clothing

Draft

Table 1.

52°F	Non-breathable clothing
80°F	All other clothing

The tables' temperatures reflect ambient air temperature

Acclimatization

2022 Emergency Rule

Clarified definition

- 7-14 days, majority in first 4-5 days.
- Can be lost after a week away from working in the heat.

Recommendation:

Close observation of employees for 14 days when new and returning to work in heat, & during sudden temperature increases by:

- Regular communication by phone or radio for lone workers, **or**
- Mandatory Buddy system, **or**
- Other effective means of observation.

Draft

Clarified definition

- 7-14 days
- Can be lost after 7 days away from working in the heat.

Added Requirement:

Close observation of employees:

- For 14 calendar days:
  - When **newly assigned** to work at table 1 temperatures
  - When **returning** to work in heat, after 7 calendar day absence
- During a **heat wave** (at least table 1 trigger temperatures, and 10˚F higher than the average max temperature of the preceding 5 days)

High Heat - Trigger Temperature

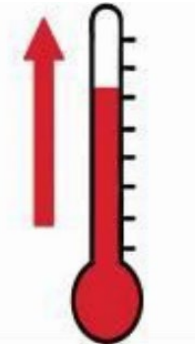


Illustration from Cal/OSHA

2022 Emergency Rule

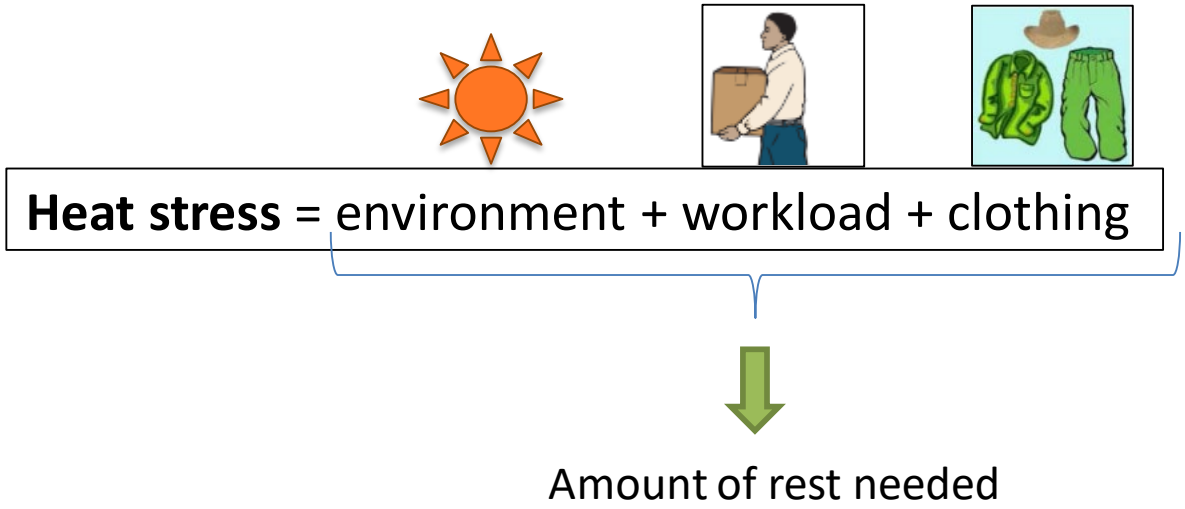
Additional requirements at and above **89˚F**

Draft

High heat procedures at and above **90˚F**

High Heat – Work/Rest Cycle Discussion

Rest to reduce overall heat stress to
prevent core body temperature from rising to dangerous level



Images c/o Stacey Holland & https://deohs.washington.edu/pnash/heat_illness

Rest in the 2022 Emergency Rule

- **Preventative** cool-down rest periods: as necessary to prevent overheating
- **Mandatory** cool-down rest periods: 10 min/2 hrs at and above 89˚F

Illustration from Cal/OSHA

Are 10 minute breaks every 2 hours enough at all times >90˚F?

Methods to determine rest time per work cycle

- National Institute for Occupational Safety and Health (**NIOSH**)
- American Conference of Governmental Industrial Hygienists (**ACGIH**)

Both incorporate:



- Environment (e.g. humidity, radiant heat from sun, air motion)
- Workload (e.g. light, moderate, heavy)
- Clothing (e.g. double layer woven clothing, regular work clothes, non-breathable)
- Other factors (e.g. acclimatization status, rest conditions, level of hydration, fitness, age)

Examples of rest times using ACGIH methods

Example 1

- **Temperature:** 95˚F
- **Clothing:** non-breathable chemical resistant suit
- **Workload:** moderate work
-

~ 35 minutes of rest /hour if acclimatized

A 10-minute break every 2 hours is **not** enough in **every** situation >90˚F

Exa

- **Temperature:**100˚F
- **Clothing:** woven coveralls on top of regular work clothes
- **Workload:** moderate work
- other additional assumptions

~25 minutes of rest/hour if acclimatized

Building a work/rest cycle table **Example** based on ACGIH methods

Air Temp °F	Other Clothing (rest/work time)	For Vapor Barrier (rest/work time)
90	10 min/ 2hr	30 min/ hr
95	10 min/hr	35 min/hr
100	25 min/hr	40 min/hr
105	30 min/hr	45 min/hr

Different work/rest cycle approaches – Discussion

Provide a simple work/rest cycle table, pre-calculated & will be applicable to multiple work scenarios

Air temperature	work/rest time (based on clothing)

Pros:
- Easier to follow & implement
- Burden removed from employers and employees to determine workload, humidity, and other factors

Cons:
- Not adjustable based on workload and other factors

Provide ability to establish own work/rest cycles based on multiple factors:

environment + workload + clothing

+ other

Pros:
- Flexible. Employers can adjust workloads and other factors to reduce rest time

Cons:
- More difficult to establish and implement
- Burden placed on employers and employees

Please provide us written feedback!

- Please provide us any written feedback by **August 10, 2022**. Please consider the following questions:
  1. What is important to consider when establishing work/rest cycles for high heat procedures?
  2. What methods have you used to reduce exposure to heat stress that you have found successful, and when (e.g. scheduling work at cooler times of day, lower work intensity, use of swamp coolers)?
  3. What concerns do you have regarding worker protection from heat?

- Please send comments to Carmyn Shute: Carmyn.Shute@Lni.wa.gov

L&I DOSH Outdoor Heat Rulemaking:

10 minute break

Please see Zoom chat for return time

A chance to stretch your legs and take a deep breath

Stakeholder Meeting Communication Plan

How you can expect to hear from us

- Would you like to receive emails regarding outdoor heat rulemaking?
  - Sign up for GovDelivery emails: https://public.govdelivery.com/accounts/WADLI/subscriber/new?topic_id=WADLI_19
- Would you like to view copies of the stakeholder meeting presentations?
  - Visit our L&I DOSH ambient heat rulemaking website: https://lni.wa.gov/safety-health/safety-rules/rulemaking-stakeholder-information/ambient-heat-exposure-rulemaking

Please provide us written feedback!

- Please provide us any written feedback on this topic by **August 10, 2022**. Please consider the following questions:
  1. What is important to take into consideration when establishing work/rest cycles for high heat procedures?
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- Please send comments to Carmyn Shute: Carmyn.Shute@Lni.wa.gov

Q&A Expectations

- Everyone is encouraged to participate. Please participate with intention.
- This is a public work session, not a forum for debate; appreciate the diversity of perspectives.
- Maintain a respectful space. Listen to and respect other points of view.
- One person speaks at a time. Please do not interrupt other participants who are speaking.
- Since this is a public work session, anything shared has the potential to become part of a public record.

Thank you! Questions?

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Be Heat Smart! Your Outdoor Heat Safety Program
Lni.wa.gov/heatsmart

Need help with your Outdoor Heat Exposure Program,
Contact an L&I Safety and Health Consultant
DOSHConsultation@Lni.wa.gov