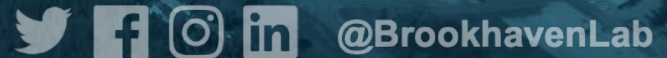




TAKE FIVE for Safety-Summertime

Frank Craner

June 18, 2024



Background on Heat Hazards

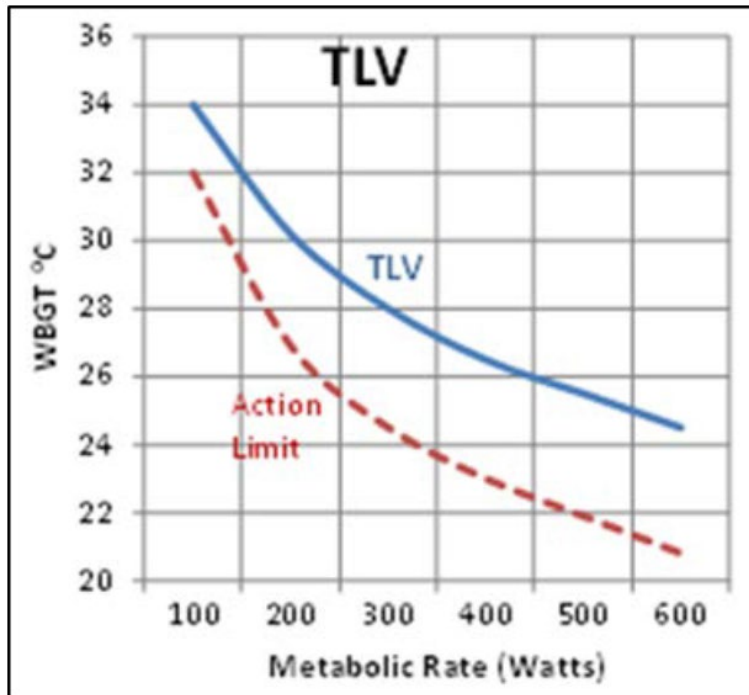
BNL follows the DOE requirement of 10 CFR 851 Worker Safety and Health Program

- This requires that we follow OSHA or ACGIH 2016 Threshold Limit Values (TLV)
 - Currently OSHA does not have a thermal hazard standard. They address thermal hazards in their technical manual.
 - In October 2021, OSHA published an Advance Notice of Proposed Rulemaking (ANPRM) for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings in the Federal Register.
 - DOE announced in August 2022 the start of its own rulemaking.

Figure 1. Heat-related illness risk factors (NIOSH 2016)



The goal of this TLV® is to maintain body core temperature within + 1°C of normal (37°C)



- Metabolism rate, work activity, WBGT, and clothing are taken into account.
- Factors related to clothing are in the table below:

Table 1:
Clothing-Adjustment Factors for some Clothing Ensembles*

Clothing Type	Addition to WBGT [oC]
Work Clothes (long sleeve shirt and pants)	0
Cloth (woven material) coveralls	0
Double-layer woven clothing	3
SMS polypropylene coveralls	0.5
Polyolefin coveralls	1
Limit-use vapor-barrier-coveralls	11

*These values must not be used for completely encapsulating suits, often called Level A. Clothing Adjustment Factors cannot be added for multiple layers. The coveralls assume that only modesty clothing is worn underneath, not a second layer of clothing.

How to access the heat stress page

<https://heatstress.bnl.gov/>

The screenshot shows a web browser displaying the BNL Heat Stress Conditions page. The page title is "BNL Heat Stress Conditions". A message states: "Refresh the page to access data for the current date and time." Below this, a grey box indicates "Heat Stress Conditions Do Not Exist At This Time". A paragraph explains that when conditions exist, a red Work-Rest regimen is shown, with temperatures as 30-60 minute averages in Celsius/Fahrenheit, updated daily from 8:30AM to 5:00PM. A table shows the current WBG Index (Outdoor) as < 27.5 °C / 81.5 °F, with a last update on 06/18/2024 at 09:41 AM. An "Additional Info" box on the right provides contact information for Nicole Bernholz and a link to the Heat Stress Notification System. Below, a table shows the Hourly Work-Rest regimen based on the current WBG Index and Work Load Level. A yellow box contains a warning: "Do not ignore anyone's signs or symptoms of heat related disorders. Stay hydrated. *Use physiological monitoring." At the bottom, the formula for WBG Index (Outdoor) is given as 0.7Wet Bulb + 0.2Globe + 0.1Dry Bulb, followed by a table of current values: Wet Bulb Temp (21.8 °C / 71.2 °F), Globe Temp (27.8 °C / 82.0 °F), and Dry Bulb Temp (24.7 °C / 76.5 °F).

BNL Heat Stress Conditions

Refresh the page to access data for the current date and time.

Heat Stress Conditions Do Not Exist At This Time

When Heat Stress conditions exist, the appropriate Work-Rest regimen appears in red. All temperatures are 30-60 minute averages and are stated in degrees Celsius/Fahrenheit. This information is updated daily from 8:30AM to 5:00PM when potentials for heat stress conditions exist.

WBGT INDEX (OUTDOOR)	DATE AND TIME	TIME OF LAST UPDATE
< 27.5 °C / 81.5 °F	06/18/2024 09:57 AM	06/18/2024 09:41 AM

Hourly Work-Rest regimen based on the current WBGT Index and the Work Load Level

Light Work	Moderate Work	Heavy Work	Very Heavy
Normal Work Conditions	Normal Work Conditions	Eval*	Eval*

Do not ignore anyone's signs or symptoms of heat related disorders. Stay hydrated.
*Use physiological monitoring.

WBGT Index (Outdoor) = 0.7Wet Bulb + 0.2Globe + 0.1Dry Bulb

Wet Bulb Temp	Globe Temp	Dry Bulb Temp
21.8 °C / 71.2 °F	27.8 °C / 82.0 °F	24.7 °C / 76.5 °F

Additional Info

Send inquiries to [Nicole Bernholz](#)
[Safety and Health Program Areas](#)
[Join the Heat Stress Notification System](#)

Work Activity Categorization

<https://intranet.bnl.gov/esh/guides/heatstresses/acgih%20heat%20stresses%20metabolic%20rate%20category%20activity-2021-1130.pdf>

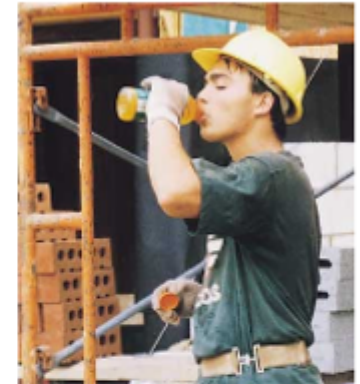
The following table, which shows the ratings of tasks, can be used to understand the threshold for heat stress alerts. The Environment, Safety, and Health Representatives (ESHRs) will assist in these evaluations. This table is used in conjunction with the Heat Stress Notification System messages and Industrial Hygiene Heat Stress Standard Operating Procedures.

ACGIH Heat Stress Metabolic Rate Category & Activity	Task Rate	Task Watts
REST (0- 115 W)	Rest	115
Sitting	Rest	115
Sitting quietly	Rest	115
Sitting with moderate arm movement	Rest	115
LIGHT (116-180 W)	Light	180
Sitting with light work with hands and arms	Light	115
Sitting with light work with arms and legs	Light	115
Driving	Light	115
Standing with some light arm work and occasional walking	Light	115
Standing with light or moderate work at machine	Light	115
Standing with light work at bench while using mostly arms	Light	115
Standing with light or moderate work at bench	Light	115
Sedentary activity (office, dwelling, laboratory)	Light	126
Book binding	Light	153
Using a table saw	Light	115
Some walking about	Light	115
Walking on level ground 2km/hr. (1.24 mph)	Light	198
MODERATE (181-300 W)	Moderate	300
Sustained moderate hand and arm work	Moderate	300
Moderate arm and leg work	Moderate	300
Moderate arm and trunk work	Moderate	300
Scrubbing in standing position	Moderate	300
Moderate workload task for 60-minute/hr.	Moderate	348.9
Standing, medium activity (shop assistant, domestic work)	Moderate	225
Building industry- brick laying block 15.3 kg (34 lbs.)	Moderate	225
Washing dishes- standing	Moderate	261
Raking leaves	Moderate	306
Washing clothes by hand and ironing	Moderate	306
Iron and steel- ramming the mold with a pneumatic hammer	Moderate	315
Building a concrete mold	Moderate	324
Cutting across the grain with one-man power saw	Moderate	369
Walking about with moderate lifting or pushing	Moderate	300
Walking on level at 6 Km/hr. (3.7 mph) while carrying 3 Kg weight load	Moderate	300
Walking on the level 5 km/h (3 mph)	Moderate	360

Prevention and Protection

Precautions for Preventing Heat Illnesses:

- **Shade:** Shield work area or break area from direct sunlight
- **Air Movement:** Fans, unobstructed breezes, A/C
- **Clothing:** Short sleeve shirt made of cotton
- **Personal Protective Equipment:** Ice vests, wet headbands, Vortex suits
- **Fluid Intake**
 - Cool water every 20 minutes
 - Salt in food
 - Electrolyte (Gatorade® type) drinks



III. HEALTH HAZARD INFORMATION RECOMMENDATION

Personal Factor that increase the risk of heat stress are

Age	People become more susceptible to heat stress, as they get older.
Weight	Excessive weight insulates the body core and increases risk.
Fitness	Fit people are at less risk.
Un-acclimatized	Acclimatization is a series of physical adaptations the body make as is gets "use to heat" and allows a worker to be less prone to heat disorders and able to do more work in heat.

How to Prevent Heat Strain

Stay hydrated

- NIOSH recommends that for moderate activity in moderate conditions, drink 1 cup of water every 15 to 20 minutes

Keep cool

- Take breaks in a shaded or air-conditioned area
- Schedule high heat jobs to cooler times of the day
- Reflective clothing, water-dampened cotton clothing, and cooling vests with pockets for cold packs can help.

Remember

- When you are wearing Tyvek or other non-breathable clothes, or other protective wear, don't wait for the notifications.
- The work planning needs to include provisions for heat stress.
- Additional personal monitoring can be used.

Health Effects of UV Radiation

- **Skin Cancer**
- **Sun Burn/Other Skin Damage**
- **Cataracts and Other Eye Damage**
- **Immune Suppression**

UV radiation can neither be seen nor felt, it is important therefore that workers who have the potential to be exposed to intense levels of UV radiation are aware of the risks and are regularly reminded to take prompt, appropriate protective action

UV Index

Exposure Category	Index Number	Sun Protection Messages
LOW	<2	You can safely enjoy being outside. Wear sunglasses on bright days. If you burn easily, cover up and use sunscreen SPF 30+ . In winter, reflection off snow can nearly double UV strength.
MODERATE	3-5	Take precautions if you will be outside, such as wearing a hat and sunglasses and using sunscreen SPF 30+ . Reduce your exposure to the sun's most intense UV radiation by seeking shade during midday hours.
HIGH	6-7	Protection against sun damage is needed. Wear a wide-brimmed hat and sunglasses, use sunscreen SPF 30+ and wear a long-sleeved shirt and pants when practical. Reduce your exposure to the sun's most intense UV radiation by seeking shade during midday hours.
VERY HIGH	8-10	Protection against sun damage is needed. If you need to be outside during midday hours between 10 a.m. and 4 p.m., take steps to reduce sun exposure. A shirt, hat and sunscreen are a must, and be sure you seek shade. Beachgoers should know that white sand and other bright surfaces reflect UV and can double UV exposure.
EXTREME	11+	Protection against sun damage is needed. If you need to be outside during midday hours between 10 a.m. and 4 p.m., take steps to reduce sun exposure. A shirt, hat and sunscreen are a must, and be sure you seek shade. Beachgoers should know that white sand and other bright surfaces reflect UV and can double UV exposure.

Protect Yourself

- Avoid prolonged exposure to the sun when possible.
- Wear sunscreen with a minimum SPF of 15.
 - SPF refers to how long a person will be protected from a burn.
 - SPF only refers to UVB protection.
- Wear sunscreens that also protect against UVA:
- Reapply at least every 2 hours and each time a person gets out of the water or perspires heavily.
- Some sunscreens may lose their effectiveness when applied with insect repellents. You may need to reapply more often.
- Wear clothing with a tight weave or high-SPF clothing.
- Wear wide-brimmed hats and sunglasses with UV protection and side panels.
- Take breaks in shaded area

(NIOSH) Publication No. 2010–116

Air Quality

Monday, June 17, 2024

Air Quality Advisories: What You Need to Know to Protect Your Health

By Deborah Engelhardt

Brookhaven Lab participates in a program that distributes air quality health advisories issued by the New York State Department of Environmental Conservation (DEC). When air quality concentrations of ozone or fine particulates are forecast to reach a "trigger" level—at which point people's health may be adversely affected—the Lab distributes an alert.

Each day, the State measures pollutant concentrations to determine an air quality index (AQI) value. The highest AQI value for the individual pollutants is the AQI value for that day. To make it easier to understand, the AQI is divided into six categories each for ozone and particulates that correspond to different levels of health concern. The State announces an Air Quality Health Advisory when the AQI value for ozone or fine particulates is forecast to be 100 or more. Usually, we'll receive the advisory the afternoon prior.

Articles In This Issue

- Director's Message for June 17, 2024
- Time to Reflect on National Safety Month
- Goal Setting Closes 6/28 – Performance Appraisals Open 7/1
- Enroll Now in Institutional Mentorship Program Cohort 4

Air Quality

Protecting Your Health During an Ozone Health Advisory

- The highest ozone levels typically occur during summer months.
- All people, and especially children, those who work or exercise outdoors, and those with respiratory diseases, should limit strenuous outdoor activity during the afternoon and early evening hours when ozone levels are highest.
- If you have asthma or other respiratory problems, stay in a cool area where the air is filtered or air-conditioned, if possible.
- Schedule outdoor exercise and children's outdoor activities for the morning hours. Individuals who experience respiratory symptoms may wish to consult their doctors.

Protecting Your Health During a Fine Particulates Health Advisory

- When outdoor levels of fine particulates are elevated, going indoors may reduce your exposure.
- Some ways to reduce exposure are to limit indoor and outdoor activities that produce fine particles (for example, burning candles indoors or burning wood outdoors) and avoid strenuous activity in areas where fine-particulate levels are high.

Reminders for RHIC Access

- RHIC Facility remains posted ODH-1
- All entries require a permit
- All entrants must have training and medical surveillance completed.
- All entrants must wear POM, and have the Escape Pack with them
- All Jobs approved to ensure adequate supply of POMs/Escape Packs