# BEAT THE HEAT 2025: HOW MUCH HYDRATION IS ENOUGH?

## WATER TO LIVE

Water is an essential nutrient for all living things. It makes up 70 percent of planet Earth and 60 percent of our bodies. It keeps us functioning at optimal performance levels by regulating our core body temperature, carries key nutrients to vital organs and flushes internal toxins. We simply cannot survive without it.

# WATER FOR BALANCE

Whether walking to your car or performing a strenuous task at the jobsite, your body is always working to maintain a balance and sustain its core temperature. And because our bodies are constantly exposed to elements that increase body heat and deplete hydration levels, workers must be extra careful when working in extremely hot or extremely cold conditions. Not only do extreme temperatures take a toll on the body, but they also make workers way more susceptible to becoming dehydrated. Symptoms of dehydration include:

Thirst	Fatigue	Muscle cramps
Nausea, dizziness or confusion	Excessive perspiration	Hot, dry skin

It is important to recognize these symptoms and not let them progress into worse conditions. Serious risks are associated with dehydration, which can range from heat rash to heat stroke and even death.

# HOW MUCH WATER?

So, how much hydration is enough? As a general guideline, the recommended amount of water intake is one quart per hour of active work or exercise for the average adult. That is the equivalent of 128 ounces (3.78 liters) every four hours at minimum. It is also suggested that the water intake be distributed over time, such as every 15 minutes per shift.

However, every worker is different. The exact amount of hydration intake depends on the individual. It's important to consider the following factors when heading out and when performing a Job Safety Analysis (JSA):



Do any underlying health conditions exist?

What is the level of physical exertion?

What type of environment is the work being performed in?

Is the temperature hot?

Is the environment new to the individual?



# PREPARE TO PREVENT HEAT STRESS

Above all, prevention is key to minimizing the risks associated with the effects of dehydration. Worksite management should use the following simple strategies to promote hydration in the workplace:

- Always provide cold water that is readily and easily available to all team members.
- Ensure there is shade near the work area and areas to take breaks in cooled or air-conditioned environments.
- Follow work/rest regimen schedules to prevent prolonged exposure to high heat.
- Educate team members consistently on heat stress prevention Beat the Heat!

#### RECOGNIZING HOW MUCH WATER YOU NEED EACH DAY IS AN IMPORTANT PART OF YOUR PLAN TO BEAT THE HEAT!

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6/2/2025

Source: https://www.safetyandhealthmagazine.com/articles/12512-worker-hydration

# BEAT THE HEAT 2025: USING THE HEAT INDEX TO BEAT THE HEAT

## **ABOUT THE HEAT INDEX**

The U.S. National Oceanographic and Atmospheric Administration (NOAA) developed the heat index system. The heat index combines both air temperature and relative humidity into a single value that indicates the apparent temperature in degrees Fahrenheit, or how hot the weather will feel. The higher the heat index, the hotter the weather will feel, and the greater the risk that outdoor workers will experience heat-related illness. NOAA issues heat advisories as the heat index rises.

### **NOAA's National Weather Service**

#### Heat Index Temperature (°F)

		80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
	40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
	45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
(%	50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
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dit	60	82	84	88	91	95	100	105	110	116	123	129	137				
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ati	80	84	89	94	100	106	113	121	129								
Rel	85	85	90	96	102	110	117	126	135								
-	90	86	91	98	105	113	122	131									
	95	86	93	100	108	117	127										
	100	87	95	103	112	121	132										



Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Danger

Extreme Caution

Extreme Danger

#### WHY HUMIDITY MATTERS

Caution

Relative humidity is a measure of the amount of moisture in the air. Sweat does not evaporate as quickly when the air is moist, as it does in a dry climate. Since evaporation of sweat from the skin is one of the ways the human body cools itself on a hot day, high humidity reduces our natural cooling potential and we feel hotter. Low humidity can also be a problem for outdoor workers in hot, desert-like climates. Sweat evaporates very rapidly in low humidity, which can lead to severe dehydration if a person does not drink enough water throughout the day.

# **IMPORTANT NOTE**

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The heat index values were devised for shady, light wind conditions, **and exposure to full sunshine can increase heat index values by up to 15° Fahrenheit.** To account for solar load, added precautions are recommended.









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# **NOAA HEAT ADVISORIES**

NOAA issues extreme heat advisories to indicate when excessive, extended heat will occur. The advisories are based mainly on predicted heat index values:

- **Excessive Heat Outlook:** issued when the potential exists for extended excessive heat (heat index of 105-110°F) **over the next 3-7 days.** This is a good time to check on supplies, such as extra water coolers, and refresh worker training.
- **Excessive Heat Watch:** issued when excessive heat could occur within the **next 24 to 72 hours**, but the timing is uncertain.
- Excessive Heat Warning: issued when the heat index will be high enough to be life threatening in the next 24 hours. This warning indicates that the excessive heat is imminent or has a very high probability of occurring.
- **Excessive Heat Advisory:** similar to an Excessive Heat Warning, but less serious. This is issued when the heat index could be **uncomfortable or inconvenient**, but is not life threatening if precautions are taken.

# USING THE HEAT INDEX TO PROTECT WORKERS

The heat index can be used to help determine the risk of heat-related illness for outdoor workers, what actions are needed to protect workers, and when those actions are triggered. Depending on the heat index value, the risk for heat-related illness can range from *lower* to *very high to extreme*. As the heat index value goes up, more preventive measures are needed to protect workers.

Heat index values are divided into four bands associated with four risk levels. These bands differ from those appearing in the NOAA Heat Index chart, which was developed for the public. The NOAA bands have been modified for use at worksites:

Heat Index	Risk Level	Protective Measures
Less than 91°F	Lower (Caution)	Basic heat safety and planning
91°F to 103°F	Moderate	Implement precautions and heighten awareness
103°F to 115°F	High	Additional precautions to protect workers
Greater than 115°F	Very High to Extreme	Triggers even more aggressive protective measures

**Important consideration:** NOAA devised the heat index values for shaded conditions and light winds. **Full sunshine can increase heat index values by up to 15° Fahrenheit.** Strenuous work and the use of heavy or specialized protective clothing also have an additive effect. As a result, the risk at a specific heat index could be higher than that listed in the table above if the work is in direct sunlight without a light breeze, or if work involves strenuous tasks or the use of heavy or specialized protective clothing. Extra measures, including implementing precautions at the next risk level, are necessary under these circumstances.

# **MONITORING THE HEAT INDEX DAILY**

Track the worksite heat index daily; communicate it and the required precautions to workers. Some facilities have an established system for this and some do not. In either case, it is important to ensure heat stress management is part of daily safe work planning for all team members.

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# **BEAT THE HEAT 2025:** HEAT STRESS ACCLIMATIZATION

### WHAT ARE THE BENEFITS OF HEAT ACCLIMATIZATION?

- ✓ Controlled repetitive heat exposure causes less strain to the heart and other vital organs.
- Sweating improves (higher volume, earlier onset), which cools the body more quickly. Acclimatized workers  $\checkmark$ need more water --- not less--- due to increased sweating.

Things you need to know:

Performed in a hot setting.

weeks.

Heat acclimatization is the improvement in

heat tolerance that comes from gradually

increasing the intensity or duration of work

The best way to acclimatize yourself to the

heat is to increase the workload performed in

a hot setting gradually over a period of 1-2

You begin to lose your acclimatization after

about 1 week away from working in the heat.

 $\checkmark$  Workers increase their ability to comfortably perform physical tasks in the heat.

# **TIPS FOR ACCLIMATIZATION**

- ✓ Best results will come from gradually increasing work time in hot conditions over a period of 7 to 14 days and cooling off and fully rehydrating between shifts.
- Pushing to the point of heat exhaustion will hurt, not help, your heat tolerance.
- ✓ Typically, acclimatization requires at least two hours of heat exposure per day (which can be broken into two, 1-hour periods).
- ✓ The body will acclimatize to the level of work demanded of it. Simply being in a hot place is not sufficient.
- ✓ Doing light or brief physical work in the heat will acclimatize you ONLY to light, brief work. More strenuous or longer tasks require more acclimatization.
- ✓ **Stay hydrated!** Dehydration reduces the benefits of heat acclimatization.
- ✓ Eating regular meals aids acclimatization. Food replaces electrolytes lost in sweat, especially during the first few days of acclimatization, when you lose the most salt in sweat.
- Physical fitness aids acclimatization.

# HOW QUICKLY DOES THE BODY LOSE HEAT TOLERANCE AFTER ACCLIMATIZATION?

- Acclimatization will be maintained for a few days after heat exposure stops but will begin to be lost after about 1 week away from working in the heat.
- ✓ After 1 month away from work in the heat, most people's heat tolerance will have returned to baseline.
- Working for 1–2 days in cooler conditions or taking breaks in air conditioning will not hurt acclimatization.

















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Source: https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/2017-124.pdf

### SAMPLE ACCLIMATIZATION SCHEDULE

# NIOSH Acclimatization Recommendations for *New Workers*

1st day	20% usual work duration
2nd day	40% usual work duration
3rd day	60% usual work duration
4th day	80% usual work duration
5th day	100% usual work duration

NIOSH Acclimatization Recommendations for *Workers with Previous Experience*<sup>\*</sup> with the Same Job

1st day	50% usual work duration
2nd day	60% usual work duration
3rd day	80% usual work duration
4th day	100% usual work duration

Managers should have a formal acclimatization plan for workers working in the heat. Starting new workers at full intensity is not safe.

Adjustments to the acclimatization schedule may be needed depending on the worksite's situation and on individual factors.

Most workers should be able to safely handle a full workload after 4 days of gradual increase, even though they will usually not be fully acclimatized yet. Most people will continue to see beneficial improvements in heat tolerance for up to 2 weeks after exposure starts.

Sudden shifts in work intensity or sudden increases in environmental temperature can increase the risk for heat illness even for acclimatized workers.

\*Workers returning from an absence

### **CASE STUDY: HAZARDS OF NOT ACCLIMATIZING WORKERS**

A 41-year-old construction worker was sawing boards in 93 °F heat. At 5 p.m., the worker collapsed in the parking lot. He was found by another worker. His body temperature was recorded at 108 °F when he was admitted to the hospital. He died the next day. At the time of the incident, the worker had been working for the company for one day. The company had no formal heat stress policy or acclimatization plan.

#### LESSONS LEARNED

- Heat casualties often occur with new or less experienced workers.
- Deaths from heat stress often occur during the first few days on the job.
- Employers should have heat stress policies, and should implement acclimatization plans.



Source: https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/2017-124.pdf