

Hydration

Information for employers and workers

What causes us to need more water?

A number of things—especially in combination—can increase our need for water:

- Physical exertion
- Heat
- Caffeine, alcohol, or energy drinks
- Wearing heavy equipment or personal protective clothing
- Poor physical condition
- Health problems
- Pregnancy
- Dry climate
- Increased salt intake (processed foods and cured meats typically contain large amounts of sodium.)

Some over-the-counter and prescription medications can also cause dehydration. Examples include different kinds of blood pressure pills or antihistamines. Check with a pharmacist to see if your medication requires you to drink more water.

Water makes up about 60 percent of our total body weight, and every day we lose some—even in the act of breathing water exits our body as vapor. If we lose more than we take in, the resulting dehydration can muddy our thinking, cause fatigue, and make injury more likely. Below are a few ways that water enhances our alertness, productivity, and overall health and helps prevent injuries.

Presenteeism vs. alertness

Adequate hydration helps us reason and concentrate. Even mild dehydration, defined as a 1 percent to 2 percent loss in body weight, may affect our moods and ability to think clearly. This leads to “presenteeism” at work—being physically present but not focused—and this, in turn, can lead to injuries. Moderate dehydration (a loss of more than 2 percent in body weight) can lead to short-term memory loss and affect the brain’s processing ability.

Severe dehydration (a 3 to 4 percent drop in body weight) can interfere with our ability to reason, remember, concentrate, make decisions, or solve problems. At its worst, severe dehydration is a life-threatening emergency. A study from Harvard Medical School found evidence that the brain may actually shrink when we are severely dehydrated. The study shows that the cells in our brain, like those in the leaves of a plant, appear to dry out and contract when deprived of fluid.

Fatigue and soft tissue injury vs. endurance

The body’s ability to work efficiently and safely is reduced when fatigued, and insufficient fluids and electrolytes can cause a more rapid onset of fatigue. Muscle and connective tissues lose some of their elasticity when dry and are more prone to tears and strains. Cushioning in the joints also can be compromised, causing serious soft tissue injuries.

Water is needed to help the blood deliver oxygen throughout the body and deliver

nutrients to the cells. With dehydration, the volume of water in the blood decreases, and the heart pumps harder to maintain healthy blood flow to the organs and skin. In addition, reduced blood flow to the skin can keep the body from sweating and dissipating heat, which also contributes to fatigue and other heat-related conditions. A period of acclimatization helps workers adjust to changing conditions and includes increasing water intake before the task begins.



Signs and symptoms of dehydration

Urine color is one indication dehydration. Urine that is concentrated and deeply yellow or amber can indicate dehydration.

Based on *Are you hydrated? Take the Urine Color Test*; U.S. Army Public Health Command
This color chart is not for clinical use.

Are you hydrated? Take the Urine Color Test		How does this color chart work?
● HYDRATED ●	● DEHYDRATED ●	With normal kidney function, your level of hydration is indicated by the color of your urine. Match your urine color to the closest color on the chart. For best results, watch the urine stream, not the color of the toilet water. In response to dehydration, the kidneys conserve water and excrete more concentrated urine. The more concentrated the urine, the darker the color.
Optimal	Drink more water.	
Well hydrated		
	Seek medical attention.	

Adverse chemical health effects vs. healthy filtration

Kidneys are the filters our bodies need to clear out the chemicals and toxins we are exposed to each day. This includes medications. Adequate hydration is necessary for them to function properly.

Other symptoms: mild dehydration: thirst, headache, weakness, dizziness, and fatigue

Moderate dehydration: dry mouth, little or no urine, sluggishness, a rapid heartbeat, and lack of skin elasticity

Severe dehydration: a life-threatening medical emergency characterized by extreme thirst, scant or no urine, rapid breathing, altered mental state, and cold, clammy skin

Keeping workers hydrated

Provide workers with plenty of cool water in convenient, visible locations close to the work area. Water should be clear, have no taste, and be odor-free. Water temperature should be 50-60°F if possible.

Remind workers to frequently drink small amounts of water before they become thirsty to maintain good hydration. This is true all year round, in any climate. Simply telling them to drink plenty of fluids is not sufficient. During moderate activity, in moderately hot conditions, workers should drink about 1 cup every 15 to 20 minutes. Instruct workers that urine should be clear or lightly colored.

Tell workers that it also is harmful to drink extreme amounts of water. They should generally not drink more than three gallons (48 cups) in a 24-hour period. If higher amounts of fluid replacement are needed due to prolonged work in high heat conditions, a more comprehensive heat illness prevention program may be warranted.

Inform employees that caffeine and energy drinks, often used to fight fatigue, are not a substitute for water or healthy foods. And alcoholic drinks like beer are not a good choice for rehydrating. Although they may seem to quench thirst, alcoholic beverages are strong diuretics and will likely cause dehydration. Many healthy foods contain large amounts of moisture, watermelon, for example, and can help supplement water intake.

Resources

[Heat, dehydration, and medication fact sheet from OSHA/NIOSH](#)

[Hydration in the workplace \(Europe\)](#)

[US Army poster with urine color chart](#)

[Drugs that might make you more sensitive to heat and dehydration](#)

[Dehydration in adults from WebMD](#)

[Dietary guidelines for sodium and potassium](#)

