

Hydration in Hot Working Environments¹

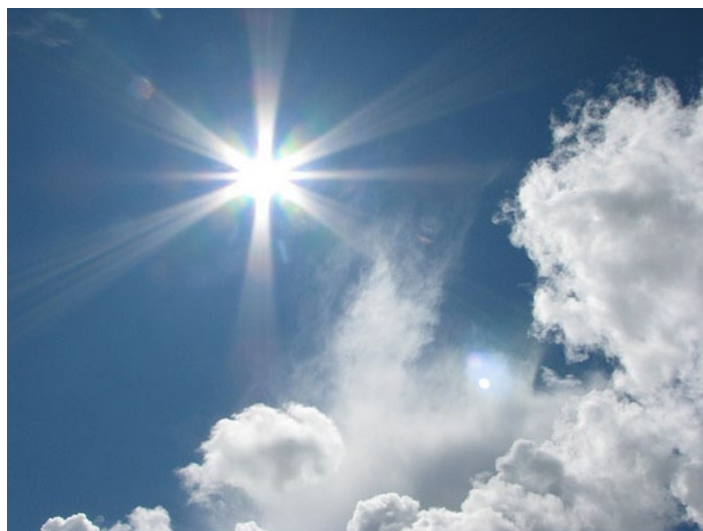
Jeanine Beatty and Gail P. A. Kauwell²

Summertime isn't the only time you should be concerned about drinking enough water to stay hydrated. Workers in construction, landscaping, laundry, factory, farm, or restaurant settings, among others, often are faced with hot working environments year-round. These conditions can increase the risk for developing heat-related illnesses, so staying well hydrated is very important. The information in this publication can help identify if you are at risk for heat-related illnesses and ways you can take action.

Did you know that water makes up more than half of your body weight? Every cell in your body needs water to function correctly. That's why it is important to stay hydrated. Your body loses water on a daily basis when you urinate, breathe, and sweat. These losses must be replaced in order to stay hydrated.

Why Do We Sweat?

Your body has different ways of making sure it doesn't overheat. One of the most obvious ways is by sweating. Sweat evaporates on your skin and helps to cool it down. Working in a hot environment can cause you to lose up to 2 liters of water per hour through sweat. That's almost 4 pounds of water weight! It's extremely important to stay hydrated as you work by replacing the water you have lost. If you lose too much water, you can't sweat as much and your body overheats. This can lead to dangerous heat-related illnesses.



Credits: Alana Sise (<http://bit.ly/GN9JmD>)

Heat-Related Illnesses

If your body is unable to cool off by sweating, you can develop a heat-related illness. Heat-related illnesses are very serious and can even lead to death. Heat-related illnesses include dehydration, heat exhaustion, and heat stroke. The quicker you can recognize and treat these conditions, the better. Descriptions of each of these heat-related conditions and tips for treating them are presented below.

Dehydration occurs when you lose too much water from your body because of sweating too much. It is corrected easily by drinking water and electrolyte solutions. Being well hydrated helps your body work better and prevents heat exhaustion. Signs of dehydration are thirst and dry mouth.

1. This document is FCS80018, one of a series of the Family Youth and Community Sciences Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date March 2012. Visit the EDIS website at <http://edis.ifas.ufl.edu>.
2. Jeanine Beatty, dietetic intern, Food Science and Human Nutrition Department, and Gail P. A. Kauwell, PhD, RD, professor, Food Science and Human Nutrition Department, University of Florida, Gainesville, FL 32611.

What to do

- Drink water or a sports drink. At least 1 pint (2 cups) for every hour you work in a hot environment is recommended.

Heat exhaustion occurs when dehydration has not been corrected, and your body becomes overheated. Signs and symptoms of heat exhaustion include heavy sweating, dizziness, nausea or vomiting, headache, or pale skin.

What to do

- Move to a cooler place or seek shade.
- Drink small amounts of cool water or a sports drink.
- Remove or loosen outer or heavy clothing.
- Seek medical attention if conditions do not improve.

Heat stroke is the most severe type of heat-related illness. It occurs when you become too hot too quickly, and your body completely fails to cool down. Warning signs of heat stroke include red, hot, or dry skin (no sweating); rapid, weak pulse; shallow breathing; confusion; unconsciousness; and a very high temperature (above 103°F).

What to do

Get medical assistance or call 911.

- Cool the victim immediately using cold packs, an ice bath, or a water hose.
- Try fanning the victim as another way to help lower their body temperature.
- Move the victim to a shady, cool place.
- Monitor body temperature.
- Remove unnecessary clothes.
- Do not give the victim anything to drink if they seem confused or disoriented. If you are unsure of the victim's mental alertness, ask them to tell you where they are, their name (if you know them or can find their identification papers), and the day of the week. If they cannot answer these questions correctly, it is likely that they are disoriented.

What Factors Can Increase My Risk for Heat Illnesses?

You are at an increased risk for a heat-related illness if you can put a check mark next to any of the following:

- I work in a setting with high temperatures or humidity.
- I work in a setting with direct sun exposure.
- My job requires strenuous physical labor.
- I come in direct contact with hot objects or equipment.
- I must wear heavy clothing, such as chemical spill suits or personal protective clothing, while I am working.



Credits: Stuart Caie (<http://bit.ly/GROq0p>)

Heat-Related Illnesses Can Be Prevented

The best defense against heat illness is prevention. Knowing if you are at risk is an important step in prevention. It is also important to stay hydrated. This requires you to know what you should drink and how much you should drink.

The amount of fluid you need depends on factors like your sex, level of physical activity, and the climate where you live. The hotter the climate, the more you need to drink. If you are working in a hot environment, keep these tips in mind:

- Drink at least 1 pint (2 cups) per hour to stay hydrated. Water or a sports drink is the best choice.
- Avoid caffeinated, carbonated, sugary (i.e., regular soda, sweetened tea, etc.), and alcoholic beverages. These beverages will cause you to urinate more, which can make you more dehydrated.
- Monitor the color of your urine. One sign of dehydration is dark-colored urine, ranging from dark yellow to orange or even darker. If you start drinking enough water, your urine should change to pale yellow.
- Drink plenty of water or other appropriate fluids often. By the time you feel thirsty, you are already dehydrated.

Jardine, D. (2007). Heat illness and heat stroke. *Pediatric Review*, 28(7), 249–258.

Sawka, M. N., Burke, L. M., Eichner E. R., Maughan, R. J., Montain, S. J., & Stachenfeld, N. S. (2007). American College of Sports Medicine position stand: Exercise and fluid replacement. *Medicine & Science in Sports & Exercise* 39(2), 377–90.

Texas Heart Institute. (2011). *Hot weather exercise tips*. Retrieved from <http://www.texasheart.org/hic/topics/hsmart/hydrate.cfm>

U.S. Department of Labor, Occupational Safety and Health Administration. (2011). *Protecting workers from the effects of heat*. Retrieved from http://www.osha.gov/OshDoc/data_Hurricane_Facts/heat_stress.pdf

Resources

Centers for Disease Control and Prevention. (2011). *Emergency preparedness and response: Extreme heat*. Retrieved from <http://emergency.cdc.gov/disasters/extremeheat>

Food and Nutrition Board. (2005). *Dietary reference intakes: Electrolytes and water*. Retrieved from http://fnic.nal.usda.gov/nal_display/index.php?info_center=4&tax_level=3&tax_subject=256&topic_id=1342&level3_id=5140

Table 1. Recommended Daily Water Intake

	Liters/day	Quarts/day	Cups/day
Men 14–18 years	3.3	3.5	14
Men 18+ years	3.7	~4	15.5
Women 14–18 years	2.3	~2.5	9.75
Women 18+ years	2.7	~3	11.5

Note. Total daily water intake from water, other beverages, and foods that are liquid at room temperature.