

Fluid Replacement Fact Sheet

HS04-059C (06-21)

Dehydration is a loss of fluids and **electrolytes** – minerals such as sodium, calcium, and potassium – that the body needs to function. **Hydration**, the process of absorbing water, is vital to maintaining cardiovascular health, proper body temperature, and muscle function. In addition, organs, such as the kidneys, brain, and heart, cannot function without these fluids, which are often lost through sweat, urine, vomit, or diarrhea. For these reasons, it is vital for employees who work in hot environments to monitor their fluid intake and guard against dehydration in the workplace.



Signs of Dehydration

Signs of **mild dehydration** include:

- thirst;
- dry lips; and
- slightly dry mouth membranes.

Signs of **moderate dehydration** include:

- very dry mouth membranes;
- sunken eyes; and
- skin that doesn't bounce back quickly when lightly pinched and released.

Signs of **severe dehydration** include all of the moderate dehydration signs, plus:

- dark yellow or no urine;
- a rapid, weak pulse (more than 100 beats at rest);
- feeling dizzy;

- cold hands and feet;
- extreme dry skin;
- rapid breathing; and
- confusion, irritability, lethargy, or fainting.

Someone severely dehydrated needs emergency medical care immediately.

Intravenous fluids (IVs) can quickly reverse dehydration. Mild and moderate signs of dehydration are treatable with home care. However, if symptoms worsen, a phone call or [telehealth](#) appointment with a physician is advised.

How Electrolytes Help

Electrolytes protect employees from heat stress. **Heat stress** occurs when the body cannot rid itself of excess heat through sweat, which causes the body's core temperature to rise and the heart rate to increase. Unfortunately, many individuals experience a decrease in their body's natural thirst mechanism at the onset of heat stress. As a

result, they tend to drink less when their body needs it the most.

Under ideal situations, electrolytes flow through muscle cells to keep the body functioning normally. However, when an employee is in heat stress, the muscle cells become depleted of fluids, and the muscle tissue weakens. Drinking water rehydrates the body, but it does not effectively and quickly replace the electrolytes needed to keep the body properly functioning.

Today, many employers provide water and **electrolyte replacement drinks**, like Gatorade or Powerade, to employees. While water is nature's perfect drink, [research shows](#) it is absorbed much slower than electrolytes by the body and is not retained in the extracellular cavity. Therefore, electrolyte replacement beverages are best in heat stress situations. Plus, the more employees like the taste, the more likely they are to drink and protect themselves against heat-related illness and dehydration.

The Risks of Losing Electrolytes

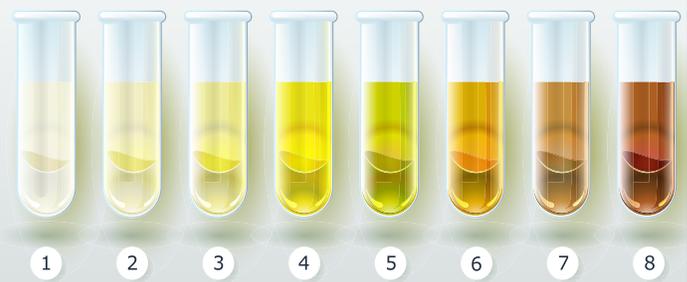
When the body's electrolytes are not adequately replaced, employees can lose energy, become fatigued, and lose productivity. They can also make poor judgment calls that put themselves or others in a hazardous work environment.

Muscle cramping, stupor, heat cramps, exhaustion — and at worst — **stroke** can occur.

Dehydration Prevention

Early intervention is the best prevention for dehydration. The body needs a constant source of fluids. **Eight 8-ounce glasses of fluids a day** are recommended to keep the body well hydrated. The [American College of Sports Medicine](#) suggests these additional tips to prevent dehydration:

URINE COLOR CHART



If your urine matches the colors numbered 1, 2, or 3, you are hydrated. If your urine matches the colors numbered 4 up to 8, you are dehydrated and need to drink more fluid.

- Eat a diet high in carbohydrates and low in fat.
- Drink plenty of fluids. Plain water or fluids without sugar, caffeine, or alcohol are the best.
- Drink 17 ounces (a little over two cups) of fluid two hours before strenuous activity.
- Drink fluids every 15 minutes during strenuous activity.
- Keep drinks cooler than the air temperature.

How much is enough?

To get an idea of how much to drink, employees should weigh themselves before and after the workday. Any weight decrease after a shift is probably due to water loss. If there is a loss of two or more pounds during the workday or shift, **drink 24 ounces of water for each pound lost.**

What about Caffeine?

Caffeine acts as a diuretic causing the body to excrete fluid instead of retaining it, so it is not wise to drink caffeine when trying to hydrate. In addition, if a dehydrated person drinks a caffeinated beverage, such as teas, soda, or coffee, the caffeine causes more urination and reverses any benefits of drinking the extra fluids.

Dehydration Diagnosis

A dehydration diagnosis is usually based on the symptoms and a physical exam. When the dehydration is moderate or severe, blood tests are often done. These blood tests give information on an imbalance in body chemistry. These tests help the health care provider decide the best type of fluid to give through an IV to correct the problem.

What are the long-term effects of the condition?

There are usually no long-term effects with mild to moderate dehydration. In contrast, untreated severe dehydration may cause **seizures, permanent brain damage, or death.**

How is the condition monitored?

A specific event or disease almost always causes dehydration. So it usually does not need long-term monitoring. However, a person who tends to take in too little fluid should be encouraged to drink consistently during strenuous or heat-stress activities and throughout the day.

While large amounts of cool water and fluid replacement drinks provide enough fluids and electrolytes, many employers should combine other safety measures. These measures may include **ventilation, shielding, equipment modifications, and protective clothing** with a **hydration program** to keep employees safe when working in the heat.

The Texas Department of Insurance, Division of Workers' Compensation (DWC) has the following environmental exposures [publications](#) to provide additional heat-related safety information:

- Heat Illness and Injury Prevention Fact Sheet ([English/ Spanish](#));
- Heat Stress Safety Training Program ([English/ Spanish](#));
- Summer Safety Tips for Workers ([English](#));
- Sun Safety - Take 5 for Safety ([English/ Spanish](#)); and
- Working Outdoors Fact Sheet ([English/ Spanish](#)).



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