



City Safe

A Guide To Assist In Training
Employees About:

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WORK ZONE SAFETY ON CITY STREETS

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*Kansas Municipal Insurance Trust
300 SW 8th Avenue
Topeka, KS 66603
Phone: (785) 354-9565
Fax: (785) 354-4186
wflowers@lkm.org*

Street “Work Zone” Safety by the Arkansas City Employee Safety Committee

The City of Arkansas City has worked over several years to improve its on-street work zone safety standards and practices. The basic elements of our effort have involved getting our staff better trained on how to set up a safe work zone and acquiring the necessary signage equipment in order to do so. The MUTCD (Manual of Uniform Traffic Control Devices) “Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility and Incident Management Operations” is our key resource manual. We have also used the “Quality Standards For Work Zone Traffic Control Devices” as a quick guide on equipment.



The first task in setting up a proper work zone is **assessing the traffic conditions**—including a review of the volume of traffic, speed of traffic, the number of turning movements, and sight distances that are available in a particular area. Once staff determines the street and traffic conditions, then the supervisor or crew leader in charge of the work determines the temporary and permanent marking equipment necessary to establish a safe work zone. On residential speed streets that involve some activity on or near the moving lanes, we typically set up work zone warning signs a block or so either side of the actual transition zone. The actual work zone is then set up according to MUTCD standards, using reflective cones, barrels, and barricades. If the work zone remains in place during nighttime hours, then flashing lights and reflective material will be added to the work zone, in order to allow the work zone to be seen easily in dark or low-light conditions.

All work zones that are set up *are reviewed by a department head or supervisor*—to ensure that they are set up in an acceptable fashion. From time to time, we utilize the police department to assist in redirecting traffic while a work zone is being set up. Any operations that are in an active street *require staff to wear reflective orange vests*. For projects of very short duration such as crack sealing, pothole repair, chip and seal work, we normally use work ahead warning signs, vehicles with flashing warning lights, and flagmen to direct traffic. For short duration projects on heavy volume streets, we will typically close off one or more lanes as the work is done in one- to four-block segments.



We review any accidents, injury incidents, or near misses that occur involving a work zone to assess whether we have utilized proper procedures and standards and to make changes to improve our training or practices. We annually review our safety signage equipment and refresh the training for all of our staff on setting up proper work zones.

In cases where a work zone involves a long duration on a heavy volume or high speed street, we will *often have a private sign contractor set up and maintain the work zone*. Probably the most complicated work

zone that the City of Arkansas City has ever set up was an emergency street repair project under a highway connecting link underpass. The repair took more than two weeks to complete, and involved “platooning” opposing traffic on a single passable lane underneath the underpass. In this particular case, we platooned traffic through the underpass, utilizing staff with two-way radios and stop/slow signs for two days—until a sign contractor was able to install a temporary traffic signal system.

Work zone safety starts with preparation. And, safety doesn’t just happen...it’s a matter of planning and execution.

What is Heat Stress?

Although it may not seem like it from the cooler than normal temperatures around Kansas this year, summer will soon be here. As Kansans, we all know that temperatures can become extremely dangerous in the middle of summer. These extreme temperatures and intense work outside can combine to create potentially life threatening heat related conditions for city workers. But what exactly are these heat related conditions and how can they be prevented?

Below are three heat related conditions as defined by OSHA:

HEAT STROKE occurs when the body’s system of temperature regulation fails and body temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. Heat stroke is a medical emergency. The primary

signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature.

HEAT EXHAUSTION. The signs and symptoms of heat exhaustion are headache, nausea, vertigo, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment. Heat exhaustion should not be dismissed lightly; however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, a medical emergency.

HEAT CRAMPS are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused by both too much and too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution ($\pm 0.3\%$ NaCl), excess salt can build up in the body if the water lost through sweating is not replaced. Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments.

When the body becomes overheated, less blood goes to the active muscles, the brain, and other internal organs. Workers get weaker, become tired sooner, and may be less alert, less able to use good judgment, and less able to do their jobs well.



As strain from heat becomes more severe, there can be a rapid rise in body temperature and heart rate. Workers may not realize that this is happening because there is no pain. Mental performance can be affected with an increase in body temperature of two degrees (F) above normal. An increase of five degrees (F) can result in serious illness or death.

The most serious illness is heat stroke. Its effects can include confusion, irrational behavior, convulsions, coma, and even death. Heat stroke can make survivors very sensitive to heat for months and cause varying degrees of brain and kidney damage. More than 20% of people afflicted by heat stroke die, even young and healthy adults. An average of nearly 500 people are killed each year in the United States by the effects of heat.

During hot weather, heat illness may be an underlying cause of other types of injuries, such as heart attacks on the job, falls, and equipment accidents arising from poor judgment.

OSHA offers the following information about recognizing, evaluating, and controlling heat stress with these 10 tips for workers and employers:

1. Drink cool water. Anyone working in a hot environment should drink cool water in small amounts frequently—one cup every 20 minutes. Employers should make water available. Avoid alcohol, coffee, tea, and caffeinated soft drinks, which cause dehydration.
2. Dress appropriately. Wear lightweight, light-colored, loose-fitting clothing, and change clothing if it gets completely saturated. Use sunscreen and wear a hat when working outdoors. Avoid getting sunburn.
3. Work in ventilated areas. All workplaces should have good general ventilation as well as spot cooling in work areas of high heat production. Good airflow increases evaporation of sweat, which cools the skin.
4. Work less, rest more. Supervisors should assign a lighter workload and longer rest periods during days of intense heat. Short, frequent work-rest cycles are best. Alternate work and rest periods with longer rest periods in a cooler area, and schedule heavy work for cooler parts of the day.
5. Ask how workers are feeling. Supervisors should monitor workplace temperature and humidity and check workers' responses to heat at least hourly. Allow a large margin of safety for workers. Be alert to early signs of heat-related illness and allow workers to stop their work for a rest break if they become extremely uncomfortable.
6. Know the signs and take prompt action. Employees and employers should learn to spot the signs of heat stroke, which can be fatal. Get emergency medical attention immediately if someone has one or more of the following symptoms: mental confusion or loss of consciousness, flushed face, hot, dry skin, or has stopped sweating.
7. Train first-aid workers. First-aid workers should be able to recognize and treat the signs of heat stress. First aid workers should also be able to recognize the signs and symptoms of heat exhaustion, heat cramps, and other heat-related illness. Be sure that all workers know who is trained to give first aid.
8. Reduce work for anyone at risk. Employers should use common sense when determining fitness for work in hot environments. Lack of acclimatization, age, obesity, poor conditioning, pregnancy, inadequate rest, previous heat injuries, certain medical conditions, and medications are some factors that increase susceptibility to heat stress.
9. Check with your doctor. Certain medical conditions such as heart conditions and diabetes, and some medications can increase the risk of injury from heat exposure. Employees with medical conditions or those who take medications should ask their doctors before working in hot environments.
10. Watch out for other hazards. Use common sense and monitor other environmental hazards that often accompany hot weather, such as smog and ozone.

Safe-T-Tips

Putting fuel into the tank of a hot engine can vaporize the fuel creating an explosive situation. If you plan ahead, you can minimize this danger by filling the fuel tank before starting the job or after an extended break. If you run out of fuel during work, let the engine cool down and remove the cap slowly to relieve the pressure.

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300 SW 8th Avenue
Topeka, KS 66603