



AGRICULTURAL PERSONNEL
MANAGEMENT PROGRAM
NEWSLETTER



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A GUIDE TO AGRICULTURAL HEAT STRESS

OSHA expects agricultural employers to evaluate and control heat stress, and conduct employee training if necessary. EPA requires that pesticide handlers and early-entry workers get training on "prevention, recognition and first aid treatment of heat related illness." This guide is intended to provide information to help managers protect employees from heat illness. Some things may not be reasonable in your situation. You may have to modify this program to fit your conditions.

INTRODUCTION ... High temperatures and humidities place employees, especially pesticide handlers wearing personal protective equipment (PPE), at risk of heat illness. Pesticides are absorbed through hot, sweaty skin sooner than through cool skin. Heat illness can also lead to falls, heart attacks, and equipment accidents.

Heat stress is the body's buildup of heat generated by muscles and from surroundings. Heat exhaustion and heat stroke result when you are exposed to more heat than you can take. When your body becomes overheated, you get weaker, tired, and less alert and able to use good judgment. As heat stress becomes severe, there can be a rapid rise in body temperature and heart rate. You may not realize this is happening. There is no pain. Most serious is heat stroke. Effects include confusion, irrational behavior, convulsions, perhaps coma. Even young victims have died.

Controlling heat stress is the responsibility of management *and* employees. Designate someone who can recognize, evaluate, and control heat stress to manage your program.

Manager's duties include: (1) assuring workers drink enough water, (2) setting up work/rest cycles, (3) monitoring environmental conditions, (4) adjusting work practices and assignments as necessary, (5) overseeing new workers' heat acclimatization, and heat stress training for supervisors and workers, (6) treating heat stress, (7) following up on heat illness incidents to prevent recurrence, and (8) providing safety meetings during heat spells.

Workers are responsible for (1) following instructions for heat stress control, (2) being alert to heat illness signs in themselves and others, (3) drinking enough water before, during, and after work, (4) taking pulse counts under severe heat stress conditions, (5) reporting and responding to heat stress problems, and (6) personal hygiene, not using drugs, and getting adequate rest and sleep.

ESTABLISH A DRINKING WATER PROGRAM ... Drinking water is most important in maintaining workers' health and performance in the heat. A leading cause of heat illness is dehydration, which reduces the body's ability to disperse heat through sweating.

The water needed to replace lost body fluids varies among individuals, and is affected by temperature, humidity, and type of work. Daily water needs for moderate summer work in *temperate* regions ranges from 6 to 10 quarts. On hot days, a worker can lose 3 gallons of perspiration.

At low humidities, you can sweat heavily and still have dry skin. In extreme heat, you can sweat up to 2 quarts per hour, but this rate can not be tolerated for long! Drink enough water to maintain body weight. Sharp weight losses indicate inadequate water. Other indications are dark yellow urine, and passing less urine than usual. "Weighing in" each morning is a way to monitor weight.

Remind workers often to drink water, even when busy. Thirst does not measure water needs. Workers drinking water only to satisfy thirst drink about two-thirds of that needed. This can mean a weight loss of 2 to 4 pounds on hot days. Chronic dehydration can develop gradually over several days, without thirst. It can lead to such health problems as kidney stones and urinary infections. Generally, workers in the heat should drink at least a cup of water each 30 minutes, and greater amounts in extreme conditions, even if they are not thirsty. It is easier to drink smaller amounts of water frequently than larger amounts less often.

Drinking several cups of water before work gives you a head start. Experienced, "heat-adjusted" supervisors and workers who have not previously followed a strict "by the clock" water-drinking schedule may be surprised at the reduction of heat strain.

Workers should not deliberately limit the water they drink to keep from stopping to urinate. In hot conditions, drinking lots of water does not cause an increase in urine, unless you've consumed excessive caffeine.

Generally, 2-3 gallons per worker per hot day is enough. Water temperature should be 50 to 60 degrees F. Most people tend not to drink warm or very cold water in quantity as willingly as cool water.

Soft drinks are not recommended as beverages to replace body fluid. The gas makes them hard to drink in quantity. Dilute ice tea or lemonade are alternatives if sugar content is low. Unfortunately, drinks that "cut" thirst discourage sufficient fluid replacement.

Balanced diets usually contain enough salt, even in hot weather. Heavy salt diets may interfere with heat adjustment, causing illness.

Alcohol increases the risk of heat illness and injuries. Urge workers not to drink alcohol during hot weather before work, and until the end of the evening meal after work, to give their body a chance to replace fluids. Employees who are under the influence of alcohol on the job compromise the employer's interests, endanger their health and safety and the health and safety of others, and can cause a loss of efficiency, productivity, or a disruptive working environment.

ACCLIMATIZATION TO HEAT ... Acclimatization is the gradual process where your body is "hardened" (made used) to higher work and heat levels. Being in good physical shape is not the same as being acclimatized, but it shortens adjustment time. With acclimatization, you benefit from smaller increases in body temperature and heart rate, and increased sweat production, while working in heat. Working without acclimatization greatly increases the risk of heat illness.

It takes about 7 days, working in a warm or hot environment for at least 100 minutes a day, to approach full acclimatization to that environment. Full acclimatization takes about 2 weeks. **Full-time** workers usually become naturally acclimatized as weather warms, and do not need a formal acclimatization period unless there is a sudden increase in workload, temperature, humidity, or PPE that restricts body cooling.

Once you are adjusted to hot-weather work, you stay acclimatized as long as you work at least every fourth day in similar conditions. Acclimatization starts to decline after 4 days of not working in the heat, drops significantly after a week, and is lost totally in 3 weeks. If you have been ill or have not worked for 3 weeks, you need to go

through a full acclimatization period **again**. You will not be acclimatized to higher temperatures or humidity when there is a sudden rise. To become reacclimatized to sharply higher temperatures or humidities, you should work in these more severe conditions for half your usual time. Increase this time about an hour a day.

Acclimatization lets you work under heat stress conditions that would otherwise be unbearable. Acclimatization will not reduce, and may increase, your water needs. Acclimatization procedures are summarized below.

Summary of Acclimatization Procedures

Worker Status	Heat Condition	Procedures
Full-time	Gradual warming	None. Acclimatization usually occurs naturally.
Full-time	Sudden increase in temperature, humidity, protective gear	<ol style="list-style-type: none"> 1. Cut work in hotter conditions to 1/2 usual time. For rest of the day, work in cooler environment, or lighten workload. 2. Increase time working in hotter conditions by 1 hour /day.
Newly hired, returning after not working for 3 weeks, or returning after being off sick	Warm; protective gear's worn Hot	<ol style="list-style-type: none"> 1. <i>Light-to-moderate work:</i> Start work in the heat for minimum of two 60-minute periods each day. For rest of day, work in cooler environment, or lighten workload. <i>Moderate to heavy work:</i> Start work in the heat for minimum of two 50-minute periods each day. For balance of day, work in cooler environment, or lighten workload. 2. Increase time working in the heat gradually by 1 hour/day until full acclimatization is approached (average 5-7 days).

General Principles:

- Adjust acclimatization period to the type of work, the type of clothing worn, the climate, and the worker.
 - Start with a lighter workload; increase level of work gradually.
 - Start with longer rest periods; decrease length gradually.
 - Closely monitor workers' response to working in the heat.
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MANAGING WORK ... Include the following approaches in heat stress control:

Workers recover from heat more effectively with shorter, more frequent breaks than with longer, less frequent breaks. Longer frequent rest breaks are necessary for heavier work and work in higher temperatures and humidities.

Promote drinking water during breaks. When possible, take breaks in shade. It is hard to rest effectively in the heat. In open fields, tarpaulins tied to 4 posts can provide shade where no other shade is available. Rest breaks help workers recover from heat because the heart rate slows, the body cools down, and body fluids lost from sweating are replaced with drinking water. Consider wearing brimmed hats and sunglasses for shading the head and eyes.

Some people try to finish a task as soon as possible. Both workers and employers often face economic pressure not to interrupt work. Do not let workers push themselves or be pushed to work when they feel ill from heat. Insist that workers take time to cool down. "Toughing it out" is dangerous.

Under mild conditions, workers wearing protective gear might take a 10-minute break per hour. When heat stress conditions increase, a 5-minute break every half-hour is better. When workers work in chemical-resistant suits and/or in higher temperatures and humidities, the length of rest breaks and the amount of water they drink must increase **sharply**. For situations where taking off protective gear and putting it back on may increase exposure to pesticides, cooling garments can reduce the need for breaks.

Pesticide handlers and “early entry” workers required to wear protective gear present a conflict between protection against pesticide exposure and heat stress. One way to slow the buildup of heat when wearing protective gear is to **use cooling vests**. These vests have the disadvantages of extra weight, limited time of use, and the need to store coolant packets. Nevertheless, they are an effective way handlers wearing chemical-resistant suits reduce heat stress.

Work/rest cycles should be flexible. Even among acclimatized workers, there are differences in work capacity and heat tolerance, and tolerance can vary from day to day. It is more important that supervisors understand the trends and underlying principles of *Work/Rest Tables 1 and 2* rather than following work/rest times exactly.

Rotating tasks ... When possible, rotate heavier tasks among workers in the best physical shape. Alternate heavy work with medium and light work.

Shifting times for certain activities ... When possible, schedule heavy tasks and work requiring protective gear for **cooler hours of the day**, but be aware heat stress can still occur. Workers should still be alert to heat strain, take breaks to cool down, and drink water to replace body fluids. **Postpone non-essential tasks** during heat spells.

Children ... When working in hot environments, pre-adolescent children generate more heat for their body weight than adults and their bodies do not sweat as much. As a result, children tend not to cool off as quickly, and have a lower tolerance for work in high temperatures.

Children need longer rest breaks, fewer work hours per day, fewer work days per week, and to be directed to drink adequate amounts of fluid. Give children extra supervision. Their judgement is different from that of adults. Encourage child workers to be alert to heat illness symptoms in themselves and not to take risks.

SETTING WORK/REST SCHEDULES ... The following principles, along with Tables 1 and 2, help in setting work/rest schedules. Individual requirements may vary greatly. Work/rest periods in the tables **do not** guarantee protection against heat illness, and should not substitute for experience and judgment. Read the notes in the tables.

Supervisors should oversee work/rest periods and check temperature and humidity hourly when workers are working in hot environments. On sunny days, relative humidity typically drops as temperature rises. In greenhouses, higher humidities and the heating effect of the sun should be accounted for in setting work/rest periods.

Shorten work periods and increase rest periods and water consumption: for heavier work; as temperature rises; as humidity increases; when PPE is worn; as the sun gets stronger (late morning through early afternoon); and when there is no air movement, such as work in enclosed spaces. Shorten work periods and increase rest periods for children and pregnant women. Adjust work/rest periods to other specific work and worker conditions. New and unacclimatized workers should be assigned lighter work and longer breaks, and be monitored.

Do not cut breaks for cooling down short. Breaks are necessary to slow the heart rate and cool down deep body temperature. (This is not the same as skin temperature.) Feeling cooler is not in itself a good indication deep body temperature has dropped and that the heart rate has slowed enough.

As conditions become severe, you can check the recovery heart rate after 1 minute of rest by counting the pulse. Place the index and middle fingers on the opposite wrist below the thumb. Count the pulse for 30 seconds. If the rate's over 55 beats (110 per minute), shorten the next **work** period by one-third.

APPROXIMATE WORKLOAD LEVELS - For Use in Tables 1 and 2

The harder the task, the hotter workers get, and the more frequently breaks are needed. Generally, working faster *increases* workload.

Light: Sorting light materials, inspecting crops, driving mobile equipment on paved roads, piloting spray aircraft.

Moderate: Using a chain saw, off-road operation of mobile equipment, periodic handling of moderately heavy materials, weeding, hoeing, and picking fruits or vegetables, air blast and boom spraying, knapsack spraying on level, even, ground, washing vehicles or aircraft, walking 2-3 mph.

Heavy: Transferring heavy materials, shoveling, digging, hand mowing, loading sacks, stacking hay, planting seedlings, hand-sawing wood, moving irrigation pipe, knapsack spraying on rough ground or on an incline, walking 4 mph.

Very heavy: Heavy shoveling or digging, ax work, climbing ladders, lifting more than 44 pounds at 10 lifts/minute, walking over 4 mph, jogging, running.

Table 1 - APPROACH FOR SETTING WORK/REST PERIODS AND AMOUNT OF DRINKING WATER FOR WORKERS WEARING NORMAL WORK CLOTHING

Temperature		Light Work	Moderate Work	Heavy Work	Minimum Water to Drink [†]
Deg F	Deg C		Work Schedule		
90	32	Normal	Normal	Normal	↓
91	33	Normal	Normal	Normal	
92	33	Normal	Normal	Normal	
93	34	Normal	Normal	Normal	
94	34	Normal	Normal	Normal	
95	35	Normal	Normal	45/15 [‡]	
96	36	Normal	Normal	45/15	
97	36	Normal	Normal	40/20	
98	37	Normal	Normal	35/25	
99	37	Normal	Normal	35/25	
100	38	Normal	45/15 [‡]	30/30	1/2 pint (1 cup) every 30 minutes
101	38	Normal	40/20	25/35	
102	39	Normal	35/25	25/35	
103	39	Normal	30/30	20/40	1/2 pint every 15 minutes
104	40	Normal	30/30	20/40	
105	41	Normal	25/35	15/45	
106	41	45/15 [‡]	20/40	Caution ^{‡‡}	
107	42	40/20	15/45	Caution ^{‡‡}	
108	42	35/25	Caution ^{‡‡}	Caution ^{‡‡}	1/2 pint every 10 minutes
109	43	30/30	Caution ^{‡‡}	Caution ^{‡‡}	
110	43	15/45	Caution ^{‡‡}	Caution ^{‡‡}	
111	44	Caution ^{‡‡}	Caution ^{‡‡}	Caution ^{‡‡}	
112	44	Caution ^{‡‡}	Caution ^{‡‡}	Caution ^{‡‡}	

Table is based on limits for **heat-acclimatized** adults. Assumptions include physically fit, well-rested, and fully hydrated workers **under** age 40; adequate water intake; 30% relative humidity; **natural ventilation with perceptible air movement**; and air temperature reading in Fahrenheit, taken in the shade, no sunshine, or no shadows visible. Some of the work/rest times in this table for hot/dry conditions may be conservative. This table is based in part on there being perceptible air movement. **Where there is little or no air movement, this table is not appropriate.**

[†]Varies from person to person. Increases with heavier work and hotter conditions. At high temperatures, there are limits to how long heavier work and consumption of large water amounts can be kept up; continue water consumption after work to replace lost body fluids.

[‡]45/15 minutes = 45 minutes work and 15 minutes rest during each hour. ^{‡‡} Indicates very high levels of heat stress.

IMPORTANT NOTE: This table is based on values for heat-acclimatized adult workers under age 40 who are physically fit, rested, and fully hydrated; with assumptions of tyvek coveralls, gloves, boots, and a respirator being worn; adequate water intake; and temperature readings taken in the shade. Cooling vests may enable workers to work longer periods. Adjustments must be made when additional protective gear is worn.

†Varies from person to person and increases with heavier work and hotter conditions. At higher temperatures, there are limits to how long heavier work and consumption of large amounts of water can be kept up; continue drinking water after work to replace body fluids.

‡No shadows are visible or work is in the shade or at night.

‡‡35/25 = 35 minutes work and 25 minutes rest each hour. **Indicates **very high** levels of heat stress.

ACCOUNTING FOR CONDITIONS ... Whether a worker can work safely in the heat depends on weather, workload, the worker's health and heat acclimation, and PPE required. As temperature rises above **70°**, heat stress controls may be needed, such as shortening work periods, lengthening rest periods, or reacclimating to the more stressful conditions. Heat exposure is more extreme in direct sun than under cloud cover, and when there is little air movement.

PPE can be cumbersome and uncomfortable and make a job more difficult. Workers wearing protective garments work harder and get hotter than they would wearing regular clothes. Protective garments reduce the cooling effects of sweat evaporation and of wind. Pesticide handlers can get hot very quickly while wearing respirators, chemical-resistant suits, and rubber boots, hats, and gloves.

Consider if a worker is feeling well, has recently been sick, or seems to be sharply losing weight. Weight loss over time may be due to not drinking enough water to replace body fluid lost as sweat. Consider if a worker is rested, is taking medication, or appears to have consumed alcohol that day.

Local weather information is reported by NOAA Weather Radio. Check temperature and humidity hourly when workers are working in hot environments.

Evaluating Risk of Heat Illness ... Work under hot conditions stresses the body. People with the following traits are often more heat sensitive:

Increasing age over 40, lack of heat-acclimatization, poor physical shape, previous heat illness (except heat cramps), poor nutrition, diabetes, overweight, liver, kidney, and lung problems, high blood pressure, heart disease, skin disease. Medical examinations can identify workers with special risk of heat illness.

When working in hot environments, these factors generally increase risk of heat illness:

ENVIRONMENT: Lack of air movement, humidity, temperatures **above 70° F** (80° F at night), direct sunlight, exposure to toxic agents, including pesticides.

JOB: Heavy work or prolonged shifts.

PERSONAL PROTECTIVE EQUIPMENT: Thicker clothing, several clothing layers, tight clothing, darker clothing colors, chemical-resistant garments and respirators.

PHYSICAL CONDITION AND PERSONAL HABITS: Failure to drink enough water before work, during breaks, and after work, late stages of pregnancy, fatigue, lack of sleep, diarrhea, vomiting, dehydration, infections, fever, dizziness, lightheadedness, sunburn, skin rash, recent illness or injury, recent immunization, low salt diet, malnutrition, sleeping pills and medications that limit sweating, such as atropine, scopolamine, antihistamines, some tranquilizers, cold medicines, some anti-diarrheal medications, and certain other medications (such as blood pressure medicine, diuretics, water pills, or amphetamines), use of illegal drugs, excessive consumption of caffeine, or alcohol consumption during the prior 24 hours. Alcohol and hangover lowers heat tolerance, increasing chances of heat stroke. Workers should not drink alcoholic beverages before starting work or during the workday. **Make it a rule.**

TRAIN SUPERVISORS AND WORKERS ... INCLUDE:

- (1) The heat stress program purpose and worker/supervisor responsibilities.
- (2) Causes, risk factors, and types of heat illness.
- (3) Heat stress control procedures, including: drinking enough water before work, on breaks, and after work; setting work/rest cycles to account for weather, type of work, and any required PPE; avoiding use of alcohol, illegal drugs, and non-prescription medications; and learning acclimatization procedures.
- (4) Heat stress information, including:

How heat stress affects judgment, productivity, and chance of accidents. Use examples of possible accidents, and how loss of judgment increases their chances.

How such off-the-job activities as alcohol and drug use, and failure to drink enough water or get enough sleep, can increase the risk of heat illness.

How to recognize heat illness symptoms. People suffering heat exhaustion may become unaware of surroundings, overactive, uncoordinated, and confused. They can not be expected to care for themselves.

First aid and emergency medical procedures.

- (5) Applicable PPE requirements, how PPE can increase heat stress, and measures to control heat stress, including:

The protection PPE gives, reasons for wearing it, and hazards of not wearing it.

Discuss how PPE can be inconvenient, uncomfortable, increase the risk of heat illness, and decrease mobility, vision, and hearing. Discuss how to minimize such problems.

Working shorter periods and taking longer breaks as necessary, drinking more water, and using cooling garments.

Conduct training for new workers during warm weather, and refresher training at the onset of warm weather. Check to assure workers practice heat stress control procedures.

FIRST AID AND EMERGENCY MEDICAL PROCEDURES ... On-site first aid supplies should include water, a piece of material, such as a bath towel or a large piece of cardboard, for fanning a heat strike victim, and a cotton sheet to soak in water and wrap around a heat stroke victim. Protect these supplies from pesticide and other contamination.

Arrange emergency care with a nearby medical facility. Set up emergency transportation. Post the name, address, and telephone number of the medical facility; travel directions; and information about emergency transportation at the telephone at a central worksite location. Include this information in supervisor and worker training. Pesticide applicators should carry emergency care/transportation information with them to job sites.

HEAT STRESS FIRST AID INFORMATION ... Extreme heat may make you ill. The chance of illness depends on workload, clothing, wind, humidity, and a your age and health. When heat illness signs appear, a victim's condition can quickly turn worse.

Early heat illness, heat rash, heat cramps, heat exhaustion, and heat stroke are conditions caused by overexposure to heat. Signs of early heat illness are mild dizziness, fatigue, or irritability; decreased concentration; impaired judgment. When you recognize heat-related illness in early stages, you can usually reverse it. To treat, loosen or remove clothing, rest in shade 30 minutes or more, and drink water.

Heat rash consists of tiny blister-like red spots, commonly found on clothed areas of the body, that give pricking sensations. To treat, wash through regular hygiene, take breaks from humid work conditions, and wear loose clothing. See a physician if the rash persists.

Heat cramps are often the first warnings when you are having trouble with heat. Heat cramps, caused by loss of body salts through heavy sweating, are painful muscle spasms, usually in the limbs and abdomen, and may be totally disabling. To treat, have the victim rest in a cool place. Give cool water to drink. Lightly salted beverages may also be given. Usually rest and fluids are all that is needed to recover. Lightly stretch the muscle and massage the area. The victim should not take salt tablets or salt water. These can make the situation worse.

When cramps stop, the person can usually start work again if there are no other signals of illness. Have them keep drinking plenty of fluids. Watch the victim carefully for more heat illness signs.

Heat exhaustion is more severe than heat cramps. Symptoms include cool, moist, pale, or flushed skin, chills, tingling of the hands or feet, confusion, loss of coordination, fainting, fast pulse, headache, nausea, dizziness, weakness, irritability, slurred speech, profuse sweating, excessive thirst, dry mouth, dark yellow urine, and exhaustion.

Victims may resist treatment. To treat, move the victim to a cooler, shaded area quickly. If conscious, have the worker drink as much water as possible, but not too quickly. Give about 1 glass (4 ounces) of water every 15 minutes. Don't give salt. Apply cool, wet cloths, such as towels or sheets, or splash cold water on the body. Massage legs and arms. Let the victim rest in a comfortable position, and watch carefully for changes in their condition. The victim should not resume work activities the same day. If the worker collapsed, get an evaluation from medical personnel before the worker leaves work. They should shower in cold water, and rest for the balance of the day, and overnight.

Refusing water, vomiting, and changes in consciousness mean the victim's condition is getting worse. Call for an ambulance immediately if you haven't already. Keep the victim quiet until help arrives.

Heat stroke is the least common but most severe heat emergency. Symptoms are similar to those of heat exhaustion, and may include convulsions, incoherent speech, very aggressive behavior, a slowdown or ceasing of sweating, and coma. Heat stroke most often occurs when people ignore heat exhaustion signals. Heat stroke develops when the body systems are overwhelmed by heat and begin to stop functioning.

Heat stroke is a life-threatening medical emergency. Brain damage may result if treatment is delayed. Signals of heat stroke include red, hot, dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing.

To treat heat stroke victims, move them to a shaded area, and remove outer clothing/shoes. Call your local emergency number immediately. If conscious, have them drink as much water as possible. Don't give salt. Immediately wrap the victim in a wet sheet, pour water on and fan vigorously. Avoid over-cooling. If the victim vomits, stop giving fluids. Position the victim on the side. Make sure all vomit is cleared from the mouth and nose to prevent choking. Watch for breathing problems. Keep the victim lying down. Continue to cool the body any way you can.

Treat for shock, if necessary, once the victim's temperature is lowered. Shock can not be managed effectively by first aid alone. Advanced medical care is needed as soon as possible. Transport the victim to the nearest medical facility at once. While awaiting or during transport, elevate the legs (about 12 inches). Continue pouring on water and fanning.

It is not always easy to distinguish between heat stress illness and pesticide overexposure. Symptoms are similar. Do not take time trying to decide what is causing illness. Get medical help immediately.

COMPARISON OF SYMPTOMS OF HEAT EXHAUSTION AND ORGANOPHOSPHATE/CARBAMATE POISONING

<u>Heat Exhaustion</u>	<u>Organophosphate/Carbamate Poisoning</u>
Sweating	Sweating
Headache	Headache
Fatigue	Fatigue
DRY membranes	MOIST membranes
Dry mouth	Salivation
No tears	Tears
No spit present	Spit present in mouth
FAST pulse (slow if person has fainted)	SLOW pulse
Nausea	Nausea and diarrhea
DILATED pupils	Possible SMALL pupils
Central nervous system depression	Central nervous system depression
Loss of coordination	Loss of coordination
Confusion	Confusion
Fainting (recovery prompt)	Coma (can't waken)

References: "A Guide to Heat Stress In Agriculture," US EPA, Washington D.C. (703) 305-7666, March 1994.
"Community First Aid & Safety," American Red Cross, Mosby, Inc, St. Louis, 1993.

HEAT STRESS SAFETY GUIDE FOR AGRICULTURAL WORKERS (A Tailgate Talk or Pay Check Stuffer)

Heat stress is the body's heat buildup from muscles and surroundings. It's heightened in conditions of little wind, high humidity and temperatures, and direct sunlight. Physical health, previous heat illness experiences, habits, duties, and time working affect heat-illness risks. Heat illness can lead to falls and equipment accidents.

You and your employer share responsibility for preventing heat illness. Drink water during and away from work, maintain good hygiene, avoid drugs, get ample sleep, and respond to, and report, any heat illness case to your supervisor.

It takes 7-14 days, working in heat 2 hours/day, to approach "acclimatization" (adjustment) to higher work and heat levels. Good physical condition reduces adjustment time. Acclimatization means smaller increases in body temperature and heart rate, more sweat production, and higher heat tolerance.

Full-time workers normally adjust naturally as weather warms, unless there's a sudden temperature, humidity, or workload increase. Once heat-adjusted, you remain so, provided you work at least every 4 days in hot conditions.

Acclimatization drops after 4 days of not working in heat and is lost totally in 3 weeks. If you've been ill, or haven't worked in 3 weeks, you'll need to acclimatize again.

New workers may have to be assigned lighter duties or longer breaks. To reacclimatize to sharp temperature or humidity increases, you should limit heavy work in the severe conditions to half your usual time, increasing this time an hour/day. Supervisors will adjust task assignments and work/break schedules in heat stress conditions.

Acclimatization may increase your water needs. Heat illness is often caused by dehydration, which reduces the body's ability to cool through sweating.

Drink water often. Needs, to maintain health, can be 6-10 quarts/day, and depend on temperature, humidity, and workload. At low humidities, you can sweat heavily and still have dry skin.

Drink enough water to maintain body weight. Weight losses may indicate inadequate water. Other clues are dark yellow urine, and passing less urine than usual.

It's easier to drink smaller amounts of water frequently than larger amounts less often. Generally, 2-3 gallons of water (50°-60° F) per worker per hot day's enough.

Thirst doesn't measure needs. Workers drinking water to satisfy thirst drink about two-thirds of that needed, and could lose 2-4 pounds on hot days. Don't limit drinking water to keep from stopping to urinate. In hot conditions, drinking water generally doesn't cause increases in urine.

Drink at least a cup of water each 30 minutes; every 10-15 minutes in extremely hot conditions, even if not thirsty. Drink several cups before work in hot weather. Follow a strict water-drinking schedule.

Soft drinks aren't as good as water to replace body fluids. Gas makes them hard to drink in quantity. Avoid alcohol, drugs, and non-prescription medications. Alcohol and hangovers increase risks of heat illness and injuries. Chronic dehydration can develop gradually over several days, without thirst. It can lead to such problems as kidney stones and urinary infections.

Picking crops or moving irrigation pipe under full sun in 90° F, even with low humidities and air movement, is stressful for many physically fit, adult workers, under age 40 years. Adequate rest breaks and drinking water are crucial in these conditions.

Don't shorten breaks. You need to slow your heart rate and cool down. Feeling cooler doesn't mean deep body temperature has dropped and heart rate has slowed enough.

Heat can cause skin rashes under clothing. Wash regularly, take breaks, and wear loose clothing. If the rash persists, see a doctor.

Heat cramps can be early signs of distress. They're painful, sometimes disabling, muscle spasms, usually in the limbs and abdomen. Have victims rest in the shade and drink water.

Early heat illness signs are dizziness, fatigue, irritability, and reduced judgment and concentration. Inform a supervisor quickly. Loosen a victim's clothing. Have them drink water and rest in shade at least 30 minutes.

In severe heat stress, there can be a rapid rise in body temperature and heart rate. You may be unaware this is happening. There's no pain.

Symptoms of heat exhaustion include cool, moist, pale, or flushed skin, chills, tingling of hands or feet, confusion, loss of coordination, fainting, fast pulse, headache, nausea, dizziness, weakness, irritability, slurred speech, profuse sweating, excessive thirst, and dry mouth.

Get the victim to a cooler shaded area quickly. Apply cool, wet cloths, such as towels or sheets, or splash water on the body. Massage the victim's limbs. Have the victim rest comfortably and quietly. Refusing water, vomiting, and changes in consciousness mean the victim's condition's becoming worse. Call for an ambulance immediately if you haven't already.

Heat stroke is the least common, but most life-threatening heat illness. Symptoms are like those of heat exhaustion. They include convulsions, incoherent speech, aggressive behavior, a slowdown or ceasing of sweating; red, hot, dry skin; rapid, weak pulse; and rapid, shallow breathing.

Get a victim to shade. Remove outer clothing/shoes. Call the emergency number. Have them drink water, if conscious. Don't give salt. Wrap the victim in a wet sheet, pour water on and fan vigorously. Elevate the legs 1 foot. Continue pouring on water and fanning.

This information is part of your employer's system of communication with employees about occupational health and safety. Please ask any questions you have.

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GUIA DE PROTECCION CONTRA LA INSOLACION PARA TRABAJADORES AGROCOLAS

El acaloramiento se debe al calentamiento de los músculos y otros órganos del cuerpo. Ocurre con más frecuencia cuando hay poco viento, alta humedad o temperaturas y se está expuesto directamente a los rayos del sol. El riesgo de una insolación está relacionado con el estado de salud, incidentes previos de acaloramiento, hábitos, responsabilidades y tiempo que se lleva trabajando. La insolación puede conducir a caídas y accidentes con maquinaria y equipo.

Es responsabilidad tanto suya como de su patrón prevenir la insolación o enfermedades relacionadas con el calor. Beba agua cuando trabaja y fuera del trabajo, practique buenos hábitos de higiene, no use drogas, duerma bien, y reporte a su supervisor cualquier trastorno debido al calor.

El proceso de aclimatación que toma el cuerpo para ajustarse a un nivel más intenso de trabajo o de calor toma de 7 a 14 días, trabajando bajo los rayos del sol 2 horas por día. Una buena condición física disminuye el tiempo de ajuste. La aclimatación significa un aumento menor en la temperatura del cuerpo y el pulso, mayor producción de sudor y una mayor tolerancia al calor.

Los trabajadores que trabajan de planta normalmente se acostumbran con naturalidad a las temperaturas más calurosas, a menos que ocurra un aumento repentino de temperatura, humedad o exceso de trabajo. Una vez que el cuerpo se ajusta al calor, se mantiene así, siempre y cuando usted trabaje por lo menos 4 días seguidos en condiciones calurosas.

La aclimatación se reduce si pasa 4 días sin trabajar en calor y se pierde totalmente en 3 semanas. Si ha estado enfermo o no ha trabajado durante 3 semanas, necesitará aclimatarse nuevamente.

Se deben asignar labores menos pesadas o descansos más largos a los trabajadores nuevos. Para volver a acostumbrarse a trabajar cuando la temperatura o humedad aumentan marcadamente, se debe limitar cualquier trabajo pesado a la mitad del trabajo que se realiza normalmente, aumentando el tiempo de trabajo en incrementos de 1 hora por día. Los supervisores cambiarán la asignación de labores y el horario de trabajo y descanso cuando hace mucho calor.

Con la aclimatación aumentará también la necesidad de beber agua. La insolación a menudo ocurre debido a la deshidratación, la cual reduce la capacidad del cuerpo de refrescarse con sudor.

Beba agua a menudo. Dependiendo de la temperatura, humedad y cantidad de trabajo, usted puede necesitar de 6 a 10 cuartos de galón de agua al día. Cuando hay poca humedad, usted puede sudar mucho y tener aun la piel reseca.

Beba suficiente agua para mantener su peso. La pérdida de peso puede indicar que no está bebiendo suficiente agua. Otras señales son: orines de color amarillo oscuro y orinar menos que de costumbre.

Es más fácil beber un poquito de agua con frecuencia que consumir grandes cantidades a la vez. Usualmente, un trabajador debe beber de 2 a 3 galones de agua (a una temperatura de 50° a 60° F) por día cuando hace calor.

La sed no refleja la necesidad de beber agua. Los trabajadores que beben agua para calmar la sed toman menos de dos tercios de la cantidad que necesitan, y pueden perder de 2 a 4 libras de peso en un día caluroso. No deje de beber agua para evitar tener que estar orinando. Cuando hace calor, el beber agua generalmente no aumenta la necesidad de orinar.

Beba por lo menos una taza de agua cada media hora; y, cuando hace un calor extremado, hágalo cada 10 a 15 minutos, aun si no tiene sed. Beba varios vasos de agua antes de empezar a trabajar cuando hace calor. Tenga y siga un horario estricto para beber agua.

Las bebidas gaseosas no son tan buenas como el agua para reemplazar los líquidos del cuerpo. Es más difícil beber varias botellas debido al gas que contienen. Evite consumir bebidas alcohólicas, drogas y medicinas que no hayan sido recetadas por un médico. El alcohol y sus efectos después de una borrachera aumentan el riesgo de insolación y lesiones. La deshidratación crónica puede desarrollarse gradualmente, durante el transcurso de varios días sin que se sienta sed. Y puede causar problemas como cálculos en los riñones e infecciones urinarias.

La pizca de cosechas o el tener que mover tubos de riego bajo un sol candente—90° F o más— aun si hay poca humedad y viento, es agobiante para muchos trabajadores adultos menores de 40 años, y en buena condición física. Cuando se trabaja en estas condiciones es de vital importancia beber agua y descansar adecuadamente.

No tome un descanso más corto de lo debido. Usted necesita disminuir su pulso y palpitaciones y refrescarse. El que se sienta fresco no quiere decir que la temperatura interna del cuerpo ya ha bajado y el pulso ha disminuido lo suficiente.

El calor puede ocasionar salpullido bajo la ropa. Lávese con frecuencia, tome descansos y use ropa que no le apriete. Si la irritación continúa, vea a un médico.

Los calambres ocasionados por el calor pueden ser una de las primeras señales de malestar. Estos calambres son contracciones musculares dolorosas en las extremidades y abdomen, y en ocasiones incapacitan a la persona. Cuando alguien tenga calambres, haga que la persona descanse en un lugar donde haya sombra y beba agua.

Las primeras señales de insolación son: mareo, cansancio, irritabilidad y pérdida de concentración. Si tiene estos síntomas, déjelo saber a su supervisor. Afloje la ropa de la víctima y haga que beba agua y descanse en la sombra por lo menos 30 minutos.

Cuando el calor es intenso, puede ocurrir un aumento rápido de la temperatura del cuerpo y el pulso. Tal vez no se dé cuenta de lo que está ocurriendo porque no siente ningún dolor.

Los síntomas del agotamiento causado por el calor incluyen: piel húmeda, pálida, fresca o enrojecida, escalofrío, cosquilleo en las manos y pies, desorientación, pérdida de coordinación, desmayo, pulso rápido, dolor de cabeza, náusea, vértigo, debilidad, irritabilidad, dificultad para hablar, sudor profuso, sed excesiva y boca reseca.

Lleve la víctima a un lugar fresco y sombreado inmediatamente. Coloque paños húmedos en el cuerpo, usando toallas o sábanas o rocíe el cuerpo con agua. Déle un masaje en las piernas y brazos. Asegúrese que la víctima descanse cómoda y tranquilamente. Si se niega a beber agua, tiene vómito o pierde el conocimiento, su condición ha empeorado. Si aún no lo ha hecho, llame y pida una ambulancia.

La insolación es el malestar menos común relacionado con el calor, pero es el más peligroso. Los síntomas son parecidos a los del agotamiento por calor. Estos incluyen: convulsiones, palabras incoherentes, comportamiento agresivo, disminución o cese total de sudor, piel enrojecida, caliente y seca, pulso rápido y débil, y respiración entrecortada y rápida.

Lleve a la víctima a la sombra. Qúitele la ropa: camisa, pantalones, calcetines y zapatos. Llame al número de emergencia. Haga que beba agua, si no está inconciente. No le dé sal. Envuelva a la víctima en una sábana húmeda, échele agua y échele aire. Súbale las piernas unas 12 pulgadas. Siga rociándole agua y ventilándolo.

Esta información forma parte del sistema de comunicaciones que su patrón ha preparado para los trabajadores acerca de la seguridad y salud en el lugar de trabajo. Por favor, haga cualquier pregunta que tenga.

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