



# Heat Stress Prevention Program



Training for Supervisors and Employees

Environmental  
Health and Safety



# Training Program Objectives

Protect employees from outdoor heat hazards by:

- ☀ Identifying, evaluating and controlling potential risk factors
- ☀ Providing information and training to supervisors and employees
- ☀ Proper response to heat-related illnesses

# When do employees need to be protected?

- ☀ When the outdoor temperatures reach these action levels

All other clothing	89 degrees
Double-layer woven clothes including coveralls, jackets and sweatshirts	77 degrees
Non-breathing clothes including vapor barrier clothing or PPE such as chemical resistant suits	52 degrees

# When do employees need to be protected?

- ✱ When employees are assigned to work outdoors on a regular basis
- ✱ When there is a sudden and significant increase in temperature and employees have not had time to acclimate

# Supervisor Responsibilities

- ✱ Implementing a written outdoor heat stress program by following this training program
- ✱ Evaluating and controlling outdoor heat stress factors
- ✱ Training employees
- ✱ Encouraging frequent water consumption (one quart of water per employee per hour)
- ✱ Proper response to heat-related illness

## Employee Responsibilities

- ☀ Monitoring personal factors for heat-related illness
- ☀ Frequently drinking water
- ☀ Reporting signs and symptoms of heat-related illness to their supervisor

# Environmental factors that contribute to the risk of heat-related illness

## Direct sun, heat and humidity

- ☀ More direct sun = greater risk

## Limited air movement

- ☀ Low or no wind the greater the risk



# Environmental factors that contribute to the risk of heat-related illness

## Hot equipment

- ☀ Engines add more heat



## Heat reflected from the ground or objects

- ☀ Asphalt, rocks



# Environmental factors that contribute to the risk of heat-related illness

## Physical exertion

- ☀️ What kind of work are you doing?
- ☀️ How hard are you working?
- ☀️ How long are you working?



# Environmental factors that contribute to the risk of heat-related illness

## Clothing and Personal Protective Equipment (PPE)

- ✱ Heavy clothing
- ✱ Multiple layers
- ✱ Dark colored clothing
- ✱ Protective clothing
- ✱ Vapor barrier clothing
- ✱ Chemical resistant suits
- ✱ Respiratory protection



# Personal factors that contribute to the risk of heat-related illness

## Physical Factors

- ✱ Age
- ✱ Weight
- ✱ Degree of Physical Fitness
- ✱ Degree of Acclimatization
  - ✱ Use of caffeine
  - ✱ Smoking
  - ✱ Use of alcohol
- ✱ Medical Condition

It is difficult to predict just who will be affected and when, because individual susceptibility varies

# Helpful tips for working in the heat

- ☀ Start and end the work shift early
- ☀ When possible, schedule strenuous work during the coolest part of the day
- ☀ Increase breaks if:
  - Conditions are very hot
  - Workload is heavy
  - Protective clothing limits cooling
- ☀ Take breaks in a shaded, cooler area
- ☀ Alternate heavy work with light work when possible
- ☀ Have a “Buddy System” to keep an eye on co-workers for symptoms of heat illness



# Helpful tips for working in the heat

- ☀ Work in the shade or out of direct sun when possible
- ☀ Avoid getting sunburned



- ☀ Wear proper clothing
  - Light colored
  - Light weight
  - Natural fibers
  - Hat with a brim
  - Cooling vest may be helpful in some cases

# Helpful tips for working in the heat

Remove PPE and excess clothing during breaks



# Helpful tips for working in the heat

## WATER CONSUMPTION

- ✿ It is important to drink small quantities of water throughout the day.
- ✿ One quart or more over the course of an hour may be necessary when the work environment is hot and you may be sweating more than usual.
- ✿ Supervisors are responsible for encouraging water consumption.
- ✿ Employees are responsible for monitoring their own personal factors for heat-related illness including consumption of water or other acceptable beverages to ensure hydration.



# Helpful tips for working in the heat

Proper hydration is key to preventing heat related illness

## DO

- ☀ Start work well hydrated
- ☀ Drink plenty of water throughout the day
- ☀ Consider sports drinks for electrolyte replacement when sweating a lot

## AVOID

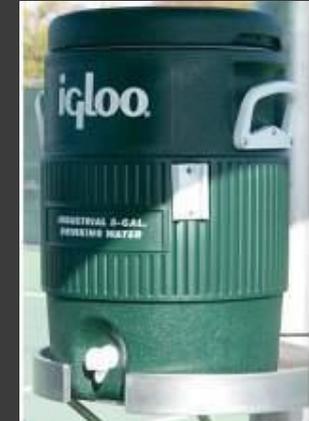
- ☀ Drinking pop and other sugary drinks
- ☀ Drinking lots of coffee and tea
- ☀ Drinking alcohol
- ☀ Waiting for thirst before drinking water



# Helpful tips for working in the heat

You can get water from these sources:

- ☀ Drinking fountains
- ☀ Closeable containers with tap (provide individual cups)
- ☀ Bottled water
- ☀ Hydration packs



Water should be suitably cool (60 degrees Fahrenheit or less)



Hydration pack



Worker wearing hydration pack

# Helpful tips for working in the heat

## Acclimatization

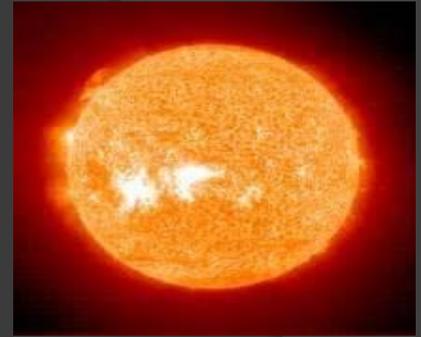
- ☀ When people are not used to being in the heat they need to adjust (acclimate) to hot working conditions over a few days.
- ☀ In severe heat, gradually build up exposure time especially if work is strenuous.
- ☀ Eastern WA workers experience more heat and are better acclimated.
- ☀ Western WA workers experience heat less often and do not have the opportunity to acclimate.



## Pay special attention to:

- ☀ New employees
- ☀ People just back from being sick
- ☀ Anyone absent for more than weeks
- ☀ People who have just moved from a cooler climate
- ☀ Everyone during heat wave events

# How the body controls heat



- ☀ When body core temperature rises:
  - Blood flows to skin increase cooling
  - Sweating increases
  - Heart rate increases to move blood and heat to the skin
- ☀ When this works well:
  - Core temperature drops or stabilizes at a safe level

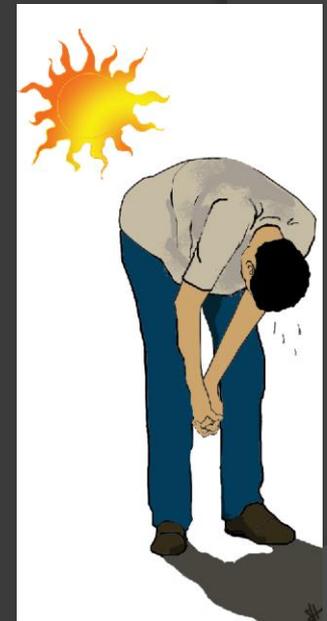
# Causes of Heat Related Illness



- ☀ So much sweat is lost that
  - Dehydration results
  - The body cannot cool itself by sweating and the core temperature rises
- ☀ Salt loss causes heat cramps
- ☀ So much blood flow goes to the skin that other organs can not function properly
- ☀ The body is subject to more heat than it can cope with and heat exhaustion and heat stroke can occur

# How to respond to a heat related illness

- ☀ Employees showing signs and symptoms of heat related illness are to:
  - Cease work and report their condition to their supervisor
  - Be relieved from duty and provided means to reduce body temperature
- ☀ Employees experiencing sunburn, heat rash or heat cramps will be monitored to determine whether medical attention is necessary
- ☀ 911 must be called if employees experience signs and symptoms of heat exhaustion or stroke
- ☀ Fill out an Incident Report for any heat related incident





# Heat Stress Illnesses

## Heat Rash

**Causes:** Likely to occur in hot, humid environments where sweat is not easily removed from the surface of the skin by evaporation and the skin remains wet most of the time.

**Symptoms:** The **sweat ducts become plugged**, and a skin rash soon appears. When the rash is extensive or when it is complicated by infection, prickly heat can be very uncomfortable and may reduce a worker's performance.

**Treatment:** The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin.



# Heat Stress Illnesses

## Heat Cramps

**Causes:** This normally happens after exercise. Most often to people who are not used to the heat, who sweat a lot or don't drink enough fluids.

**Symptoms:** Severe pain and cramps in legs and abdomen, fainting or dizziness, weakness, profuse sweating and headaches.

**Treatment:** Increase fluid intake, rest and move to a cool place. Get medical attention if cramps persist



# Heat Stress Illnesses

## Heat Exhaustion

**Causes:** This is caused by the loss of body fluids and important salts due to overexposure to high temperatures and humidity. Usually one is exposed to heat for a prolonged amount of time and becomes dehydrated.

**Symptoms:** Headache, nausea, fatigue, dizziness, skin is cool and pale, pupils become dilated. Victim is usually conscious but may faint, has a core temperature of over 102.

**Treatment:** Call 911, provide EMS with directions to work site. Get to the shade, cool off, increase fluids, cold wet towels or ice, fan, elevate legs above heart, loosen clothing, don't give any liquids containing alcohol or caffeine. If left untreated Heat Exhaustion can lead to HEATSTROKE.

# Heat Stress Illnesses

## Heat Stroke



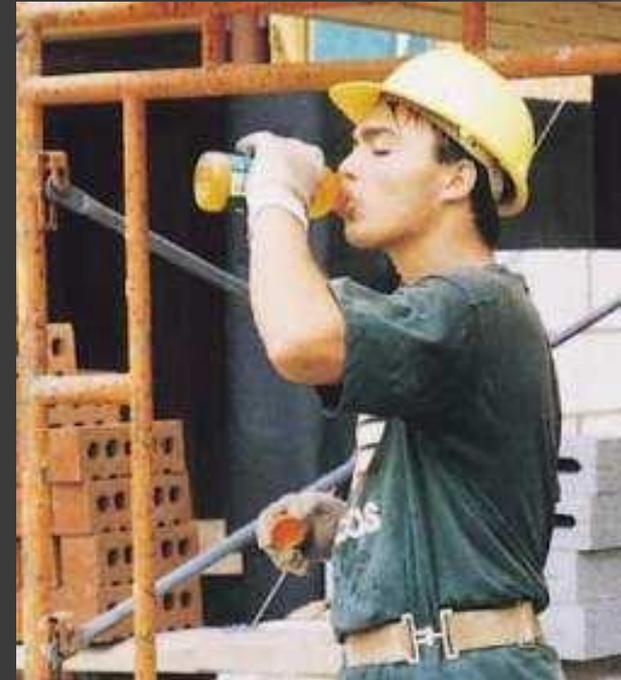
**Causes:** Heat stroke is a medical emergency and a life threatening condition. It is caused by the failure of the heat-regulating mechanisms of the body, due to high heat and humidity.

**Symptoms:** Headache, nausea, dizziness, skin is red, dry and very hot (sweating has ceased). Pulse is strong and rapid, small pupils, high fever of 105. May be disorientated, lose consciousness, possible convulsions.

**Treatment:** Call 911, provide EMS with directions to worksite. Get the victim to a shady area, loosen clothing, apply cool or tepid water to the skin (i.e. spray the victim with cool water from a garden hose), fan the victim to promote sweating and evaporation, place ice packs under armpits and groins. DO NOT give medication to lower fever.

# Remember – to prevent heat illness:

- ☀ Drink water frequently !!
- ☀ Know the signs and symptoms of heat related illnesses and take them seriously
- ☀ Consider sports drinks when sweating a lot
- ☀ Avoid alcohol, caffeinated drinks, and heavy meals before or during work
- ☀ Acclimate
- ☀ Wear appropriate clothing
- ☀ Take regular breaks in a cool area
- ☀ Keep an eye on your buddy!



# Additional Resources

Questions?

Contact Environmental Health and Safety  
at 372-7163.