

Beat the Heat & Keep Your Cool: INDOORS

Our presentation will
begin shortly...



Beat the Heat & Keep Your Cool: INDOORS

WHAT YOU NEED TO KNOW TO
PREVENT HEAT ILLNESS

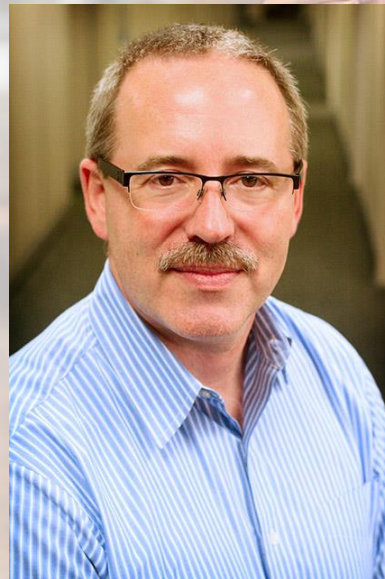


TODAY'S PRESENTER

Mark Yeck

Technical Specialist

Risk Management Services



Heat Affects Many Industries

A person wearing a white protective hazmat suit and a large, clear respirator mask with a black frame. The person is looking directly at the camera through the mask's visor. The background is blurred, showing some industrial or construction setting with warm lighting.

Fatality

- California asbestos remover
- Engaged in asbestos remediation
- Suffered heat illness and died

Heat Affects Many Industries

Fatality

- New York manufacturer employee
- Several hours on conveyor line
- Suffered heat illness and died

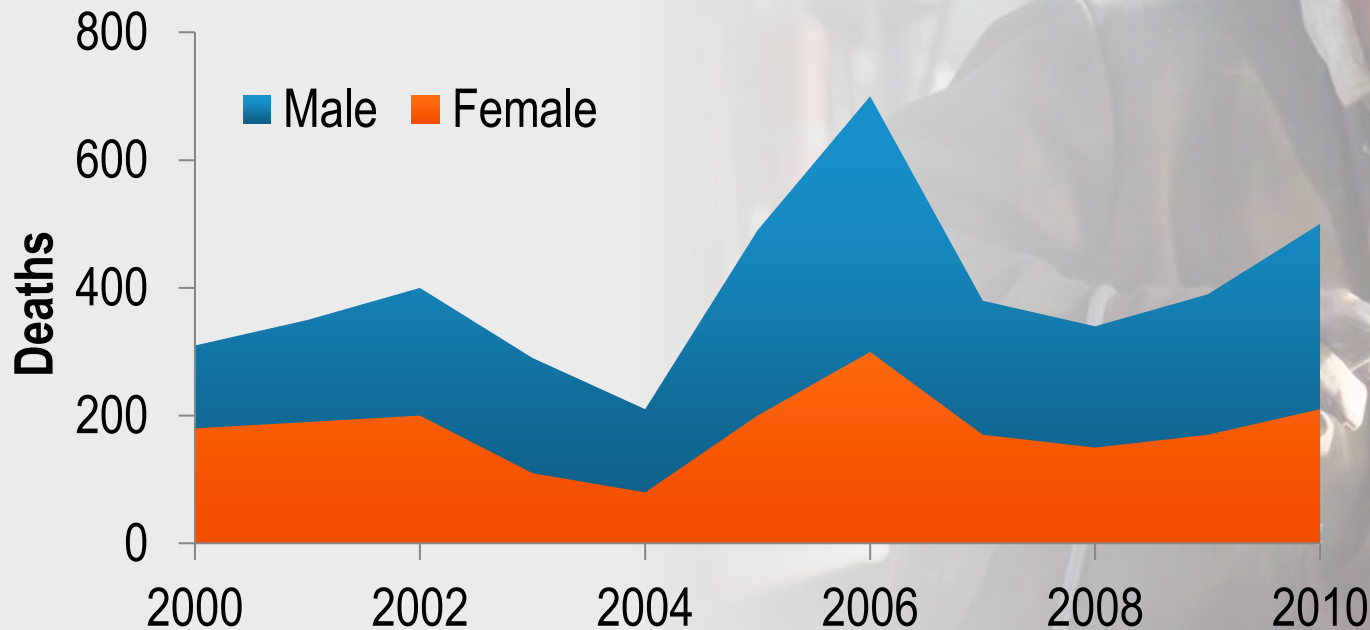
Heat Affects Many Industries

Fatality

- Industrial cleaning crew temporary worker
- After leaving work site
- Collapsed and died from heat stroke



US Heat Stroke & Illness Deaths



Today's Topics

- What is indoor heat illness?
- What regulations mean to you
- FLS framework for heat illness
- 10 tips to beat workplace heat
- Helpful resources

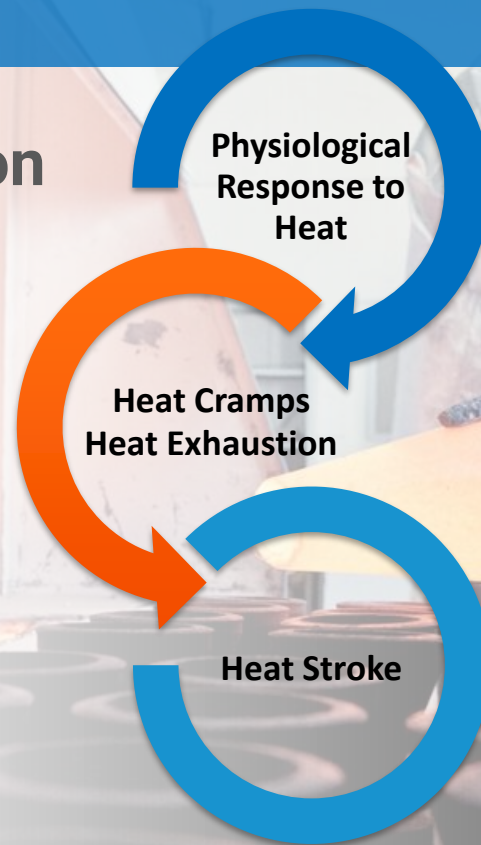
Today's Topics

- What is indoor heat illness?
- What regulations mean to you
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Heat Illness Defined

Excessive sweating = dehydration

- Body loses ability to cool
- Increased blood flow to skin causes decreased organ function
- Leads to: heat cramps, heat exhaustion and heat stroke



Heat Stress

Excessive loss of electrolytes

- Painful cramps = early warning signs
- Usually in legs or abdomen
- Stop activity, hydrate, rest in cool place!
- Get medical attention if condition continues

Heat Exhaustion

Water depletion:

- Excessive thirst, weakness, headache, loss of consciousness

Salt depletion:

- Nausea, vomiting, muscle cramps, dizziness

Stop activity and seek treatment immediately

Heat Stroke

Cooling mechanism shuts down

- Can kill or cause brain damage
- Targets over 50, young athletes, obese, disabled

50% die even with medical attention.

Know the Difference!

Between Heat Exhaustion & Heat Stroke!

**KNOW THE DIFFERENCE!**

HEAT EXHAUSTION	OR	HEAT STROKE
Faint or Dizzy		Throbbing Headache
Excessive Sweating		No Sweating
Cool, Pale, Clammy Skin		Body Temperature above 103° Red, Hot, Dry Skin
Nausea or Vomiting		Nausea or Vomiting
Rapid, Weak Pulse		Rapid, Strong Pulse
Muscle Cramps		May Lose Consciousness

- Get to a cooler, air conditioned place
- Sip water if fully conscious
- Take a cool shower or use cold compresses
- Lie down, loosen clothing

CALL 9-1-1
Take immediate action to cool the person until help arrives

Know the Difference!

Heat Exhaustion

- Pale skin
- Excessive sweating
- Headache
- Nausea or vomiting
- Blurred vision
- Dizzy, may faint



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KNOW THE DIFFERENCE!

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Know the Difference!

Heat Exhaustion



- **Call 911**
- Rest in cool place
- Loosen and remove unnecessary clothing
- Shower or sponge with cool water

**KNOW THE DIFFERENCE!**

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Know the Difference!

Heat Stroke

- Headache
- No sweating
- Red, hot dry skin
- Nausea or vomiting
- Unconscious or incoherent

KNOW THE DIFFERENCE!

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CALL 9-1-1
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Know the Difference!

Heat Stroke

- **Call 911**
- Provide immediate, aggressive, effective cooling
- DO NOT give anything by mouth
- Transport to hospital

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- Helpful resources



Regulations - Your Responsibilities

- Provide workplace free from serious hazards
- Examine workplace conditions
- Establish and communicate procedures
- Ensure employees follow safety and health requirements

Regulations - Your Responsibilities

- Provide safety training in language and vocabulary workers understand
- Adopt Injury and Illness Prevention Program

*Prevention & safety is
your responsibility*

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Risk Framework - FLS

- **Frequency** - number of times exposed to hazard
- **Likelihood** - chance severity will be realized
- **Severity** - consequences of hazard being realized

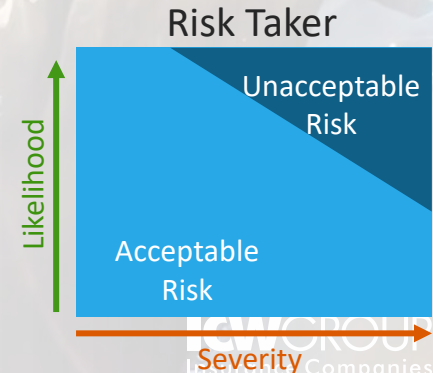
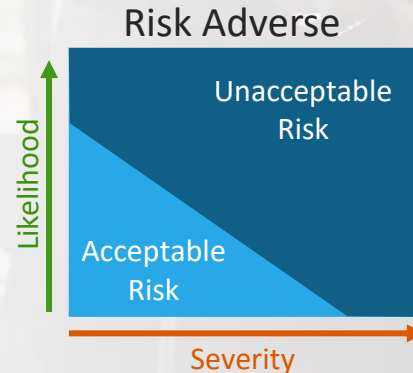
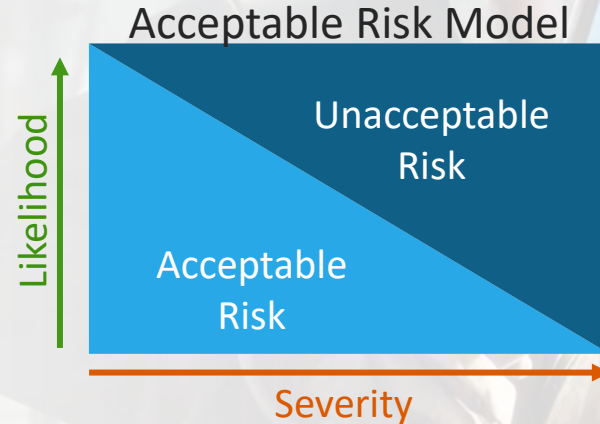


Acceptable Risk



- Established level of acceptable risk
- Poor planning causes assumed risk by default
- Exposure frequency increases risk

Risk can't be eliminated, but can be identified, quantified and reduced.



Acceptable Risk



Frequency

- Times working in over 80°F WBGT
- Completing activities involving high heat (welding, pours, oven changes)

Likelihood

- Metabolic load
- Radiant heating
- Humidity levels
- Access to cooling
- Rest frequency & length
- Access to water
- Acclimatization

Severity

- First aid response procedures
- Mandated evaluation and monitoring
- Acclimatization

Job Risk Factors



- Work intensity
- Work duration
- Location (roof, road, enclosure)
- Clothing (weight, impermeability)
- Respiratory protection

Environmental Risk Factors



- Air temperature
- Direct sunlight
- Radiant heat
- Humidity
- Little air movement

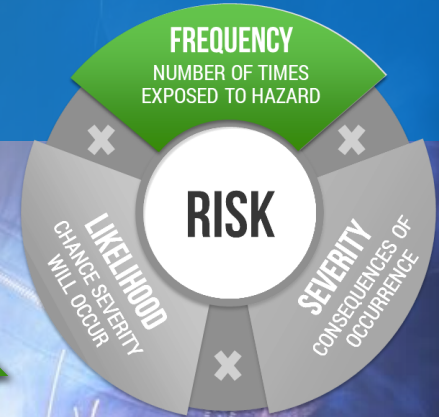
Employee Risk Factors



- Poor nutrition
- Poor physical condition
- High and low % body fat
- Previous heat illness
- Lack of acclimatization
- Over 40
- Illness (diabetes, asthma)
- Pregnancy
- Diet plans

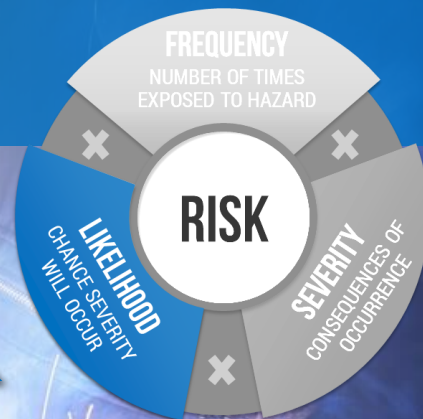
Heat Illness Risk - Frequency

- Work in temperature-controlled environments?
- When in uncontrolled areas, what are tasks?
- What are activities and times over-exposed to heat?



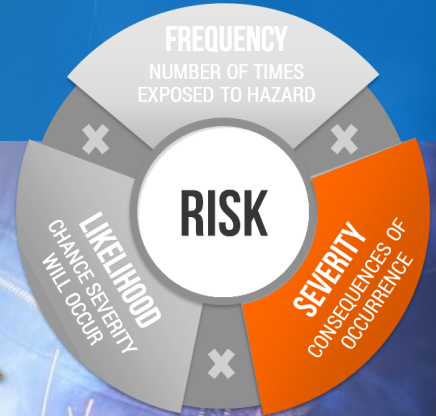
Heat Illness Risk - Likelihood

- Metabolic load - How hard is work?
- Radiant heating - molten metal, hot work, ovens?
- Humidity levels - Steam?
- Access to water?
- Frequent rests, length?
- Access to cool areas, air conditioning, cooling PPE?



Heat Illness Risk - Severity

- First aid response procedures?
- Mandated evaluation and monitoring?
- Acclimatized?



Today's Topics

- What is indoor heat illness?
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1. ACCLIMATIZATION

- Act effectively when sudden heat exposure
- Observe employees closely during heat waves
- Closely observe those newly assigned to high heat areas for first 14 days
- Lessen intensity and shift length of new hires
- Modify work schedules
- Reschedule non-essential duties
- Recognize symptoms of heat stress





2. WATCH HEAT

Environmental monitoring

- Wet Bulb Globe Thermometer

WBGT - calculated as combination of humidity, radiant, and ambient temperature readings.





2. WATCH HEAT

Personnel monitoring:

- Oral thermometer
- Ear probe
- Core temp
- Pulse rate
- Blood pressure





2. WATCH HEAT

WBGT + work load = heat stress potential

	----- Work Load* -----		
Work/rest regimen	Light	Moderate	Heavy
Continuous work	30.0°C (86°F)	26.7°C (80°F)	25.0°C (77°F)
75% Work, 25% rest, each hour	30.6°C (87°F)	28.0°C (82°F)	25.9°C (78°F)
50% Work, 50% rest, each hour	31.4°C (89°F)	29.4°C (85°F)	27.9°C (82°F)
25% Work, 75% rest, each hour	32.2°C (90°F)	31.1°C (88°F)	30.0°C (86°F)

*Values are in °C and °F, WBGT.

These TLV's are based on the assumption that nearly all acclimatized, fully clothed workers with adequate water and salt intake should be able to function effectively under the given working conditions without exceeding a deep body temperature of 38°C (100.4° F). They are also based on the assumption that the WBGT of the resting place is the same or very close to that of the workplace. Where the WBGT of the work area is different from that of the rest area, a time-weighted average should be used (consult the ACGIH 1992-1993 *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices* (1992)).





3. DRINK UP!

- Potable drinking water must be available to employees, at no cost
- Maintain, at all times, sufficient pure and cool drinking water
- Enough to provide at least one quart per employee per hour for entire shift!





4. PLAN FOR REST

- Schedule regular rest periods
- Use WBGT and workload calculation
- Employee rest can range from regular breaks, to 25% work & 75% rest per hour
- If rest area is cooled, a time weighted average can be used.





5. COOL DOWN

- Define designated “cool-down” areas
- Ideally, removed from heat
- Provide fan or conditioned air
- Supply with cool water
- Provide wet towels and items to facilitate cooling





6. EMERGENCY PLAN

- Establish procedures
- Hold pre-shift prevention meetings
- Frequent reminders to drink water
- Observe for signs of heat illness
- Mandatory buddy system
- Ensure regular, effective communication
- Designate employees to call 911





6. EMERGENCY PLAN

- Respond to signs and symptoms of possible heat illness
- Supervisor - take immediate action
- If signs of heat illness, implement emergency procedures
- Offer onsite first-aid service
- Call **911**

THE HAZARDS OF HEAT STRESS

Heat and humidity are normal parts of Ontario summers, but how your body reacts to the heat depends on how hard you are working, how much water you have been drinking, how fit you are, and whether you have become acclimatized to the higher temperatures. Heat stress can occur whenever physical work is being done in a hot, humid environment. The body tries to cool itself by increasing the heart rate to move blood—and heat—to the skin and by sweating to help cool the blood and body but when too much water is lost through sweating, dehydration occurs. This can lead to heat-related illnesses.

Illness	Symptoms	Treatment	Severity
Heat Rash	• Red blotches and extreme itching • Areas persistently damp with sweat • Irritating sensation on the skin where sweating occurs	• Rest in a cool place. • Use a shower or rinse skin with cool water. • Change into dry clothes.	If treated, symptoms usually disappear after a few days.
Heat Cramps	• Sudden cramping or spasms in the arms, legs, back, or stomach that occur suddenly at work or later at home • Head, nausea/lumps in the muscles as a result of the cramps	• Rest in a cool place. • Remove or loosen clothing. • Drink cool water or a sports drink containing electrolytes. • Stretch and massage muscles. • If the cramps are severe or don't go away, seek medical aid.	If not treated promptly, heat cramps can lead to more serious heat-related illnesses.
Fainting	• Sudden fainting after at least two hours of work • Cool, moist skin • Weak pulse	• GET MEDICAL ATTENTION. • Assess the need for CPR. • Rest in a cool place. • Remove or loosen clothing. • If conscious, raise the person's legs slightly. • If conscious, give the person sips of cool water.	If not treated promptly, fainting can lead to more serious heat-related illnesses. Fainting may also be due to other illnesses.
Heat Exhaustion	• Headache • Nausea • Irritation or swelling • Fainting (less)	• GET MEDICAL ATTENTION. • Rest in a cool place. • Remove or loosen clothing. • Lie down with feet raised. • Drink cool water or a sports drink containing electrolytes. • Do not have affected person alone. • Use a cool shower or rinse skin with cool water.	If not treated promptly, heat exhaustion can lead to heat stroke, which can be fatal.
Heat Stroke	• Irrational behaviour • Confusion • Loss of consciousness (fainting) • Convulsions • Hot, dry skin (not sweating) • Rapid pulse (not a weak pulse) • Rapid and shallow breathing	• GET MEDICAL ATTENTION. Call 911 or get the person out of the sun and into a cool place. • Cool the person's body by covering with damp cloth towels, spraying with cool water, or using a fan. • If conscious, give the person sips of cool water.	Can be fatal if medical assistance is not given immediately. Potential for serious, permanent damage.

See "Heat Stress" Checklist/History of Illness website, June 2004, www.Michigan.gov/michigan

Symptoms of heat stress should never be ignored. They are your body's way of telling you that something needs to be done to balance your body's heating and cooling systems. For more information on heat stress and helpful resources on how to prevent it, visit the **Heat Stress** topic page on **WorkSafe**.

Prevention tips for workers

- **Be aware of the symptoms.** Watch out for symptoms of heat stress in yourself and your co-workers.
- **Drink water.** You need to drink one cup of cool water every 20 minutes when it's hot.
- **Avoid alcohol and caffeinated drinks.** Alcohol and caffeinated drinks act as diuretics and cause dehydration and will dehydrate your body. These drinks should also be avoided the night before work as well.
- **Wear light, loose-fitting clothing.** Wear clothes that allow sweat to evaporate. Light-colored garments absorb less heat from the sun.
- **Know your personal risk factors.** Any of the following conditions could increase your risk for heat-related illness: dehydration, recent prescription or over-the-counter medications, heart-related illnesses, older age, heart disease, high blood pressure, recent illness, and certain medications.

Prevention tips for managers/supervisors

- **Training.** Make sure workers understand their role and remind workers about it periodically throughout the summer. Visit www.worksafe.on.ca for free safety info on heat stress and sun protection.
- **Breaks.** Give workers frequent breaks in cool areas.
- **Scheduling.** Schedule hotter jobs during cooler parts of the day.
- **Assistance.** Minimize strenuous tasks by pairing up workers or providing material handling equipment such as carts, dollies, pallet jacks, or manual forklifts.

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10 TIPS TO BEAT THE HEAT INDOORS

Heat illness is preventable! Staying cool indoors is a must when trying to work at your best effort. Follow these tips to stay cool inside the workplace.

- ACCLIMATIZE**
Get used to the heat before it gets you!
- WATCH HEAT**
Watch for signs of heat stress in yourself and others.
- EMERGENCY PLAN**
Have procedure ready before emergencies happen
- WRITE IT DOWN**
Have written steps in place and add to tips
- TRAIN MANAGERS**
Have supervisors trained and ready to act on plan
- TRAIN EVERYONE**
Help all employees recognize warning signs
- OBSERVE & ACT**
Don't wait - keep employees safe!

EMERGENCY? Call 911

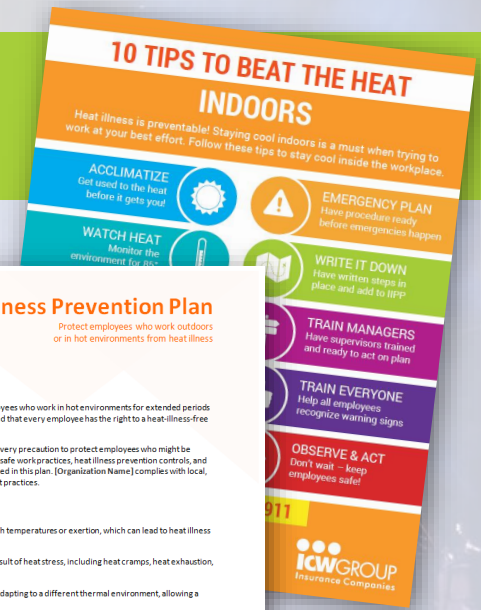
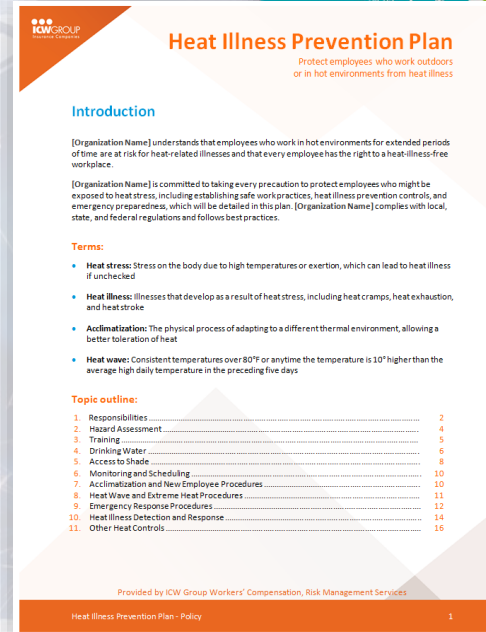
At work, stay hydrated. If you suspect heat-related illness, call 911 immediately! www.worksafe.on.ca/safety

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7. WRITE IT DOWN

- Integrate effective indoor Heat Illness Procedures into IIPP
- Keep easily accessible to employees and OSHA
- In English & language understood by majority of employees

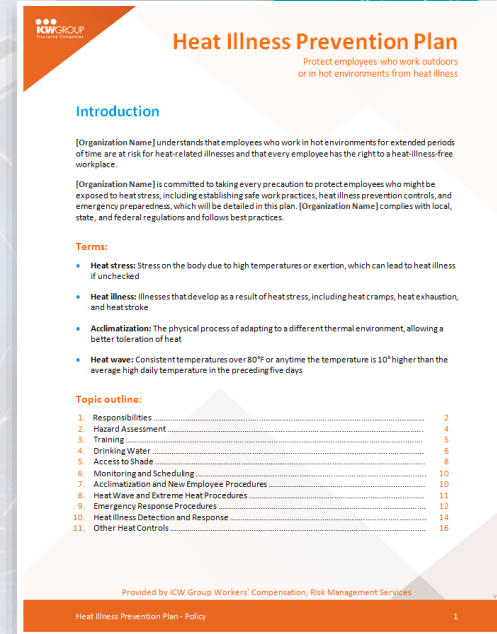




7. WRITE IT DOWN

Detail how your company will:

- Provide access to water, shade and cooling rests
- Monitor weather
- Institute high heat procedures
- Address acclimatization methods and procedures

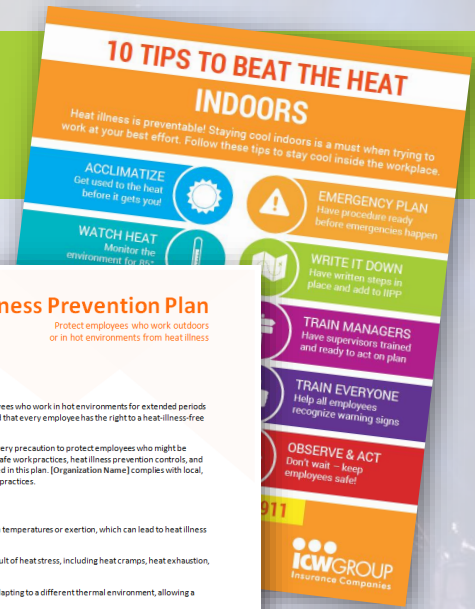
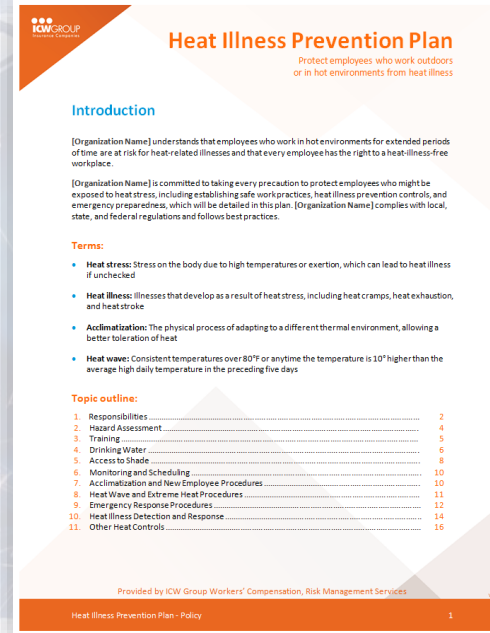




7. WRITE IT DOWN

Detail how your company will:

- Train employees and supervisors
- Respond to heat illnesses without delay, provide first aid and emergency services
- Provide clear and precise directions to worksite





8. TRAIN MANAGERS

- Before “heat stress” conditions occur
- Heat standard requirements
- Company plan and procedures
- How to monitor temperatures
- Response to hot weather advisories





8. TRAIN MANAGERS

- When to implement plan
- How to recognize heat illness symptoms
- What to do if they suspect heat illness





9. TRAIN EVERYONE

- Environmental and personal risk factors
- Added burden of heat load on body
- Your company's Heat Illness Plan
- Accessibility to:
 - Water
 - Rests & cool-down
 - First aid





9. TRAIN EVERYONE

- Importance of frequent, small quantities of water
- Different types of heat illness
- Common signs and symptoms
- Appropriate first aid
- Emergency response
- Knowledge that heat illness can progress rapidly





9. TRAIN EVERYONE

- The concept, importance, and methods of acclimatization
- Importance of immediately reporting signs to supervisor
- Procedures for responding to heat illness

Stay safe and healthy!
WATER. REST. SHADE. *The work can't get done without them.*

Drink water even if you aren't thirsty – every 15 minutes.

Rest in the shade.

Watch out for each other.

Wear hats and light-colored clothing.

2

"Easy does it" on your first days of work in the heat. You need to get used to it. Rest in the shade – at least 5 minutes as needed to cool down.

Health effects of heat
Two types of heat illness:

Heat Exhaustion

Heat Stroke

1

Watch out for early symptoms. You may need medical help.
People react differently – you may have just a few of these symptoms, or most of them.

**10 TIPS TO BEAT THE HEAT
INDOORS**

Heat illness is preventable! Staying cool indoors is a must when trying to work at your best effort. Follow these tips to stay cool inside the workplace.

EMERGENCY PLAN
Have procedure ready before emergencies happen

WRITE IT DOWN
Have written steps in place and add to it as you go

TRAIN MANAGERS
Have supervisors trained and ready to act on plan

TRAIN EVERYONE
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OBSERVE & ACT
Don't wait – keep employees safe!

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9. TRAIN EVERYONE

Physiologic Changes with Acclimation

- Increased plasma volume.
- Increased rate of sweating.
- Decreased threshold for initiation of sweating.
- Increased maximum capacity of cutaneous vasodilatation.
- Decreased electrolyte content of sweat.
- Decreased heart rate at a given work load and stress.
- Increased aldosterone production with resulting decreased urinary sodium excretion and greater volume retention.
- Lower core and skin temperature.





10. OBSERVE & ACT

- Don't wait - follow procedures
- Designated employee invokes emergency procedures
- Provide first aid
- Stay with worker
- Contact **911**
- Supply precise directions



Your Safety Resources

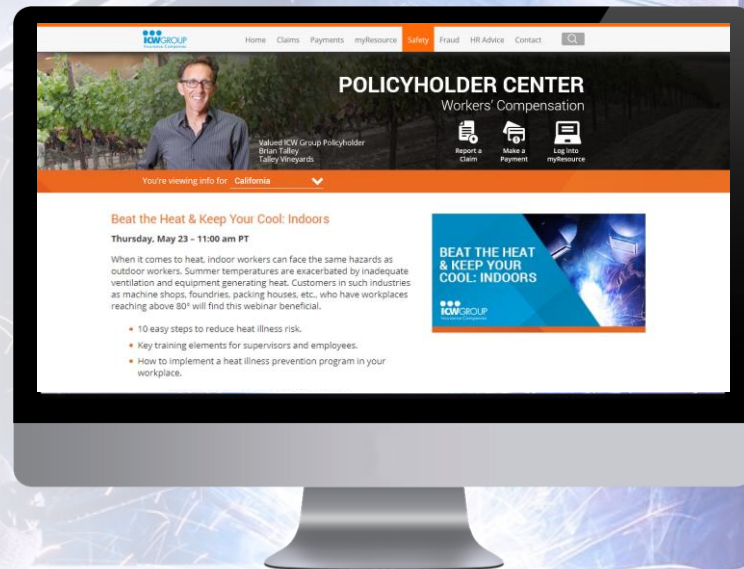
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- Safety and Risk Management area!
- Safety Webinars
- Beat the Heat materials



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- Recording of webinar
- Audio interviews
- Helpful links
- Beat the Heat materials





QUESTIONS?

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