AMERICAN COLLEGE OF OCCUPATIONAL AND ENVIRONMENTAL MEDICINE

January 26, 2022

Assistant Secretary Douglas L. Parker
Occupational Safety and Health Administration
U.S. Department of Labor
200 Constitution Avenue, NW
Washington, DC 20210

RE: Docket No. OSHA–2021–0009

Dear Assistant Secretary Parker:

Thank you for the opportunity to comment on the Occupational Safety and Health Administration (OSHA) Advanced notice of proposed rulemaking (ANPRM) – Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. The American College of Occupational and Environmental Medicine (ACOEM) is a national medical society representing 4,000 occupational medicine physicians and other health care professionals devoted to promoting optimal health and safety of workers, workplaces, and environments. ACOEM is dedicated to improving the care and well-being of workers through science and the sharing of knowledge.

ACOEM strongly supports OSHA's initiation of rulemaking to protect workers from heat-related injuries and illnesses (HRI). The comments below focus on the following elements of a successful employer HRI prevention program: heat exposure limits that trigger workplace controls, acclimatization, and other workplace controls, first aid and emergency response, worker and supervisor training, medical monitoring/surveillance, and medical removal. In our experience, these elements, and most importantly management commitment and leadership, are key to effective HRI prevention.

Occupational Heat Exposure Limits

ACOEM recommends that OSHA determine heat stress exposure limits that will inform employers and employees of the severity of the heat hazard and trigger mandatory workplace controls. The goal of heat exposure limits and a heat stress rule is to reduce the incidence of HRI and deaths. However, few studies have analyzed heat exposure levels in relation to adverse heat exposure outcomes. An OSHA study (Tustin et. al., 2018a) examined outdoor heat inspections where illness or death occurred and found the median exposure measured by the heat index (HI) was 91°F with a range of 83°-110°F (ambient temperature). A study of Deepwater Horizon clean-up workers reported increasing rates of HRI and acute injuries with increasing heat exposures. The study also noted an interaction between heat exposure on the day of the incident with heat exposure the day before when the WBGT was 28°C (82.4°F) on either the day of the incident or the day before (Garzon-Villalba et al., 2016). Although the Cal/OSHA heat standard set a simple trigger of 80°F, a baseline ambient temperature may not be appropriate for other areas of the country where humidity is a significant factor.

A single exposure limit or trigger does not take into account workload, acclimatization state, clothing, and other personal protective equipment (PPE), and personal comorbidities that can affect the severity of the heat stress hazard. If heat exposures rarely reach 80°F and do so only briefly during a work period, it is reasonable to believe that heat stress does not represent a significant hazard.

A single exposure limit or trigger has principal utility in deciding if there should be a heat stress management program. Graded trigger points have the utility of phasing in workplace controls and interventions depending on the degree of heat stress. To support the concept of graded triggers, the consensus document by Morrissey et al. (2021) on heat safety in the workplace found high-quality, peer-reviewed evidence for the following environmental heat monitoring recommendations:

- Environmental measurements should be taken on-site—as close to the individual work site as possible—to best represent environmental heat stress.
- Comprehensive heat stress assessment and associated interventions should include information on ambient environmental conditions, work demands, clothing, PPE, and worker acclimatization status.
- Environmental measurements for heat stress assessment should account for the influences of air temperature, humidity, wind speed, and radiant heat. Indices that incorporate or integrate the individual measurements can be used for heat stress assessment (e.g., wet bulb globe temperature).
- When using portable environmental sensors, employers should follow manufacturer specifications for set up, equilibration (i.e., allow time for the sensor to adjust to ambient conditions), and calibration.
- Employers should incorporate environment-based work modifications (e.g., change in number or duration of rest breaks) into workplace policies and procedures.

The wet bulb globe temperature (WBGT) index is the most widely recognized index of the environmental contributors and addresses the bulleted points from Morrissey et al. (2021). The National Institute for Occupational Safety and Health (NIOSH) 2016 criteria document proposes the Recommended Exposure Limit (REL) for acclimatized workers and the Recommended Alert Limit (RAL) for unacclimated workers. The thresholds are adjusted based on the metabolic rate. The American Conference of Governmental Industrial Hygienists (ACGIH) and International Standards Organization (ISO) also use the same limits based on WBGT and metabolic rate and provide adjustments for clothing. Any employer wishing to use WBGT-based exposure assessments based on the NIOSH, ACGIH and ISO criteria should be encouraged to do so. For those employers without the resources to use and interpret WBGT-based methods, a simplified scheme based on Heat Index (HI) can be used. Simplification comes with a loss of accuracy and the triggers will have to account for that loss. There are times during which the HI, adjusted for sunlight, may underestimate the heat stress level due to local conditions such as heat from engines (riding lawn mowers) and radiant heat from concrete (construction sites, baseball stadiums), blacktop (highway construction, athletic field construction), or similar structures (aka heat islands).

The following is offered as a framework for a simplified exposure assessment using Heat Index and referenced to WBGT-based exposure assessment. The underlying assumptions are moderate work (300 W) in direct sunlight wearing woven work clothing. The probabilities are based on Garzón-Villalba et al. (2017) with a shift in the exposure-response curve to the left of 3 °C for unacclimated and a shift to the right of 3°C for rapid heat gain (>1°C/h of core temperature). The translation from WBGT to Heat Index is based on Bernard and Iheanacho (2015). (Note: The Heat Index categories are not based on the National Weather Service.)

Level	WBGT	Heat Index In Sun	Description
Acceptable	< 25 °C (RAL = 25 °C)	< 82 °F	Low probability (< 1%) of unsustainable heat stress for anyone
Caution	25 – 28 ° C (REL = 28 °C)	82 – 92 °F	Low probability (< 1%) of unsustainable heat stress for anyone who is acclimatized
Moderate	28 – 31 °C	92 – 106 °F	Low probability (< 1%) of rapid heat gain
High	31 – 34 °C	106 – 125 °F	Significant probability (up to10%) of rapid heat gain
Extremely High	> 34 °C	> 125 °F	Likelihood (> 10%) of rapid heat gain

The acceptable (green) zone does not require a heat stress management program. The caution (yellow) zone is the trigger point for a mandatory heat stress management program. Basic heat stress controls, such as provision of shade and water and hydration drinks, acclimatization protocols, and reminder training on HRI signs, first aid and emergency response, are put in place. The moderate, high, and extremely high zones represent times when increasing controls are required. For instance, additional controls, such as work-rest cycles, would be considered in the Moderate (Orange) zone. Suspending operations, providing personal cooling or other similar controls might be required in the Extremely High (Red) zone. As noted above, there may be times that the Heat Index trigger needs to be lower due to local heat conditions.

Acclimatization

Lack of acclimatization to heat stress is the most important cause of heat-related illness (HRI) and death in occupational settings (Arbury et al., 2014; NIOSH 2016; Tustin et al., 2018b; Gun 2019; ACOEM 2021). Retrospective studies by OSHA found that 70% of heat-related fatalities involved unacclimated workers with less than one week of job tenure. In addition to HRI, studies suggest an increased risk of work-related injuries due to inadequate acclimatization, among other factors (Spector et al., 2014; Spector et al., 2019). Acclimatization is a key component of an employer heat illness prevention program (Arbury et al., 2016).

Best practices for implementing acclimatization programs include correctly identifying workers at risk, creating an acclimatization protocol that gradually increases the duration of work in hot conditions, and closely monitoring workers as they acclimate. Unacclimated workers include new workers, workers returning to work after time off, and workers transferred to a high heat stress job from one that is not. In addition, temporary or multi-employer workers may not be acclimatized. Both the staffing agency and host employer have a responsibility to assess acclimatization status.

Acclimatization protocols may vary depending on the industry, the job, and the worker. The NIOSH/OSHA approach of increasing duration of work by 20% each day over a 5-day period may be adequate in many cases. However, Tyler et al. (2016) concluded from a meta-analysis of 96 studies on heat adaptation and physiologic response that, although short acclimatization periods (<7 days) provide some benefit, programs of 14 days or longer maximize physiologic acclimatization. Loss of heat adaptation (heat adaptation decay) occurs quickly (7-14 days) but extending acclimatization periods beyond seven days may confer longer-lasting heat adaptation (Dannen et al., 2018).

Monitoring of unacclimated workers, such as through a buddy system, during the acclimatization period is a critical component of the process. Unacclimated workers should never be left alone when working in a hot environment (ACOEM 2021). An acclimatization program must also include all components of an employer's overall heat illness prevention program, including provision of adequate fluid intake and rest breaks in the shade or other cooler locations. Finally, all workers and supervisors, particularly those monitoring workers in an acclimatization program, must have training on heat-related symptoms and emergency response measures (ACOEM 2021; Morrissey 2021).

Small employers with fewer employees and resources face challenges to successful implementation of acclimatization programs. These employers will need to consider a variety of approaches to decrease heat exposure. Approaches may include adjusting the time of day for the work to limit exposure during peak heat stress or adjusting work duties to decrease workload. For indoor environments, it is helpful to increase the distance from very hot sources (e.g., industrial furnaces, molten materials, etc.) while addressing challenges of accomplishing the work from safe distances.

Engineering and Administrative Controls

Employers identify appropriate engineering and administrative controls through heat hazard assessments and use the hierarchy of controls to limit or, ideally, eliminate heat hazards. Many engineering controls exist for both indoor and outdoor heat hazards, including air-conditioning, ventilation, fans, misting devices, and shaded cooling centers. Mechanical and ergonomic methods to decrease workload, such as manual lifts, should be instituted where appropriate (ACOEM 2021; Morrissey 2021).

Administrative controls include hydration/fluid replacement, planning work during cooler parts of the shift, buddy systems, and work-rest cycles, among others. Abundant research substantiates the importance of adequate hydration (pre-shift, during shift, and post-shift) in preventing HRI. Workers must have ready access to water and electrolyte-containing liquids and to restrooms. Employers should educate workers and supervisors on signs and symptoms of hypohydration and dehydration and appropriate frequency and types of liquids to consume when working in hot environment. Employers can implement low-cost strategies to assess hydration status, such as urine color and body weight change (ACOEM 2021; Morrisey 2021; NIOSH 2016).

Morrissey et al. (2021) note that body-cooling strategies are effective but underutilized. Body-cooling strategies range from potentially expensive air-conditioning systems and cooling vests to very inexpensive, easy-to-institute methods, such as head and hand cooling, use of cold, wet towels and bandannas, water dousing and icy slush ingestion.

PPE is an important contributing cause of heat stress and may also be a control for heat stress. Heat hazard assessment should include the impact of PPE, and PPE should be selected with a view towards heat dissipation (thin, lightweight, loose, breathable, ventilated). Employers should provide a range of PPE sizes that fit most employees (Morrissey 2021). As a heat stress control in some jobs, PPE may be air-, water-, or ice-cooled (Tustin 2021; NIOSH 2016).

ACOEM strongly recommends that every workplace with potential heat stress hazards designate a competent person who is trained in heat stress causes and controls. The duties of a “heat stress competent person” would include management of the HRI prevention program, environmental heat exposure assessment, training of workers and supervisors, evaluation of HRI metrics, and continuous quality improvement of the HRI prevention program. During the Deepwater Horizon clean-up, two levels of heat stress management leadership were utilized. A heat stress manager (HSM) was responsible for the whole program, while a heat stress advisor (HSA) provided onsite supervision. An HSA was on-site at every discreet location and was authorized to implement and oversee all aspects of the HRI prevention program. Those involved in the Deepwater Horizon health and safety program believe that the HSM/HSA component was a key factor in preventing HRIs.

First Aid and Emergency Response

A first aid and emergency response plan is critical to an employer's heat illness prevention program and will save lives. Heat exhaustion can quickly lead to heat stroke and death. All employees must be trained to recognize the signs and symptoms of HRI, respond quickly with first aid measures, and rapidly refer ill workers for medical evaluation and treatment (Tustin 2021). In heat-related emergencies, the response "in the first 5-10 minutes will likely dictate outcome" (Morrisey 2021).

Best practice components of a first aid and emergency response plan include:

- Site-specific coordination with local hospitals, emergency departments and emergency response services.
- Employees should be trained on how to activate emergency response and how to provide clear directions to the worksite.
- Employees should be trained on recognition and first aid treatment of HRI.
- A buddy system should be instituted so that coworkers can quickly assess for signs of HRI.
- As noted above, a competent person or heat stress advisor should be onsite and regularly assessing workers for HRI.
- First aid supplies and equipment should be easily accessible.
- First aid response includes immediate removal from heat exposure to a cool area (shade, fans, air-conditioning), assessment for medical referral, body cooling, provision of fluids (water, hydration drinks), and constant monitoring by an employee trained to recognize signs of heat exhaustion, dehydration and heat stroke and know when to call for emergency response services.
- Body cooling methods will depend on the worksite. Methods may include ice packs, cold water baths (i.e., using a garden hose), and fans.
- Workers who display mental status changes (confusion, lack of alertness, disorientation) may be suffering heat stroke. Heat stroke is a medical emergency, and 911 should be called immediately. These workers require immediate first aid, including aggressive body cooling. A responsible person should stay with the worker until help arrives.
- Workers who have symptoms of heat exhaustion and are not improving with onsite first aid treatment should be referred for medical evaluation.
- Training of all employees on first aid and emergency response procedures should occur for all new hires and at least annually. Periodic training should also occur when increases in heat exposure are anticipated.

- Training should also include heat emergency drills at least annually, and after-drill evaluations should be conducted. A Plan-Do-Study-Act (PDSA) approach will aid employers in improving their emergency response plan.

Worker and Supervisor Training

As OSHA has noted in the ANPRM and in several studies, worker training is frequently missing from heat illness prevention programs (Arbury et. al., 2016; Tustin et. al., 2018b). Heat illness prevention training for supervisors and employees will save lives, particularly in new, unacclimated workers, young workers, temp workers, and others. Few studies have evaluated the effectiveness of HRI training in worker populations. McCarthy et al. (2019) reported a decrease in HRI after instituting a heat stress training program, along with other workplace controls, for municipal workers. An intervention study of Egyptian construction workers reported an improvement in workers' understanding of HRI and behaviors, such as hydration and body cooling (El-Shafei et al., 2018). A consensus paper on heat safety in the workplace described the importance of worker education, particularly in successful acclimatization, hydration, body cooling, first aid and emergency response (Morrisey et al., 2021).

Best practices for worker and supervisor heat safety training encompasses the following (ACOEM 2021; Morrisey 2021):

- Initial comprehensive training for new and returning workers, including temporary workers and contractors, should include HRI signs and symptoms, prevention of HRI, and first aid and emergency response.
- Frequent periodic training, particularly when there is a new rise in ambient temperature.
- Training must be in a language and manner the individual understands.
- Hydration training should include symptoms of dehydration and underhydration, optimal hydration (need for both water and electrolytes), and importance of hydration before starting work. Hydration training should also consider individual and cultural factors, along with workplace settings. Ease of restroom access is an important consideration in ensuring that workers stay hydrated (Venugopal et al., 2016).
- Training on signs and symptoms of HRI is important not only so that workers can identify early HRI in themselves, but probably more importantly so that co-workers and supervisors can identify HRI in others and act quickly to provide first aid and emergency response.
- Training should emphasize the importance of identifying symptoms in all workers, but special attention should be paid to unacclimated workers.
- Training should emphasize early signs of heat stroke, such as confusion and slurred speech.
- Training should include personal risk factors for HRI, such as chronic diseases, drug use, obesity, and previous HRI.
- Training should include basic information on the role of metabolic heat in HRI.

- First aid and emergency response training should include rehearsals and be repeated frequently.

Appendix A includes several recommendations regarding heat stress awareness training of workers and supervisors.

Medical Monitoring/Surveillance

Both NIOSH and ACOEM recommend that employers include medical monitoring/surveillance in their heat illness prevention program (ACOEM 2021; NIOSH 2016). The primary purpose of medical surveillance is to identify workers at increased risk of HRI and for which work restriction may be considered. Medical surveillance programs not only protect workers vulnerable to heat stress but also protect other workers who may be at risk when a coworker is impaired. Physicians or other licensed health care providers (PLHCP) performing medical surveillance exams can also take the opportunity to educate workers about HRI risk factors, such as medical conditions and medication, and steps workers can take to protect themselves (McCarthy 2019; ACOEM 2021).

Over the last several decades, many studies have documented personal risk factors, such as cardiovascular disease, diabetes, previous HRI, skin disorders, and infections, among others, that increase the likelihood of HRIs, including studies from OSHA (Leon and Bouchama, 2015; Westaway et al., 2015; Tustin 2018b).

Best practices for medical monitoring / surveillance programs include the following (NIOSH 2016; McCarthy 2019; ACOEM 2021):

- Medical surveillance may be offered to workers prior to work in hot environments.
- A PLHCP knowledgeable about occupational HRI may provide guidance to employers developing HRI prevention programs, and specifically the medical surveillance program, and may oversee the medical surveillance program. This may include review of OSHA logs, medical records, and other data on HRIs.
- The employer should provide the PLHCP with a job description for workers in the medical surveillance program. The job description should include a description of physical demands, anticipated heat exposure levels, and required PPE.
- Frequency of medical surveillance – The medical surveillance program may include pre-placement, annual, and return-to-work medical evaluations to determine fitness to work in heat and hot environments.
- Screening questionnaires – Consider the use of screening questionnaires (similar to how the respiratory questionnaire is used in the Respiratory Protection Standard) to clear workers by the responsible PLHCP prior to working in a hot environment, periodically (i.e., annually), and upon return to work in a hot environment. The questionnaire includes questions on medical and occupational history, medications, and other personal risk factors.
- Vital signs (weight, blood pressure, pulse, and temperature) should be obtained when an examination is indicated.

- The PLHCP may decide that a physical exam or other tests are needed before a worker can be cleared. Physical examination components should emphasize the cardiac, respiratory, skin, endocrine, neurologic, and peripheral vascular systems.
- Risk stratified measurements of kidney function, such as serum creatinine and glomerular filtration rate (GFR), of heat-exposed workers may be helpful to identify early signs of kidney damage when intervention could prevent or reverse progression (Sorensen et al., 2020).
- The PLHCP should provide the employer with a written medical opinion noting any work limitations.
- The PLHCP should provide the employee with both a verbal and written medical report advising the worker of the PLHCP's recommendations and answering the worker's questions.

Approaches to medical surveillance may vary depending on work physical demands, required PPE use, the level and duration of heat exposure, and the resources available to the employer. Employers should consult occupational health professionals with knowledge of occupational HRI and prevention in developing the medical surveillance program and components.

See Appendices: Appendix B provides an example of a screening questionnaire;

Medical Removal

Clinicians consider many personal and workplace factors in assessing a worker's fitness to work in heat hazard conditions. Age, cardiovascular and respiratory diseases, diabetes, hypertension, chronic kidney disease (CKD), obesity, previous HRI, medications, and socioeconomic factors (lack of air conditioning or fans, transportation issues) are personal risk factors to be considered. Any one condition may not be enough to place restrictions, but the combination of multiple factors may place a worker at much greater risk of HRI.

CKD is one condition that, in and of itself, requires close scrutiny. CKD affects 8% to 16% of the population worldwide and is the 16th leading cause of years of life lost worldwide. Workers with early CKD who regularly work in hot environments are at risk of more rapid CKD progression due to repeated dehydration and acute kidney injury (AKI). Those with CKD need more time to acclimatize and need to be more closely monitored. Medical removal should be considered for workers with moderate to severe CKD as they are at increased risk for HRI and AKI (Chen et al., 2019). The PLHCP should inform the worker of these risks and consult with the worker's primary care physician or nephrologist. Additional confounding chronic conditions like diabetes and heart disease should make early removal a strong consideration.

In summary, many U.S. workers are at risk of HRI. An OSHA Heat Injury and Illness Prevention Standard is necessary to prevent occupational HRI and promote the well-being of U.S. workers. ACOEM stands ready to assist OSHA in achieving this goal.

Sincerely,

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ACOEM President

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APPENDICES

Appendix A – Heat stress awareness training "pearls"

- Begin heat stress awareness campaigns early in the project during the cooler weeks/months.
- Engage early adapters as heat stress champions to inspire and influence the late majority and laggards.
- Leverage experience and storytelling to drive heat awareness messages.
- Employ spaced or drip feed learning--toolbox talks are useful as a constant refresher and reminder to heat stress.
- Recognize, understand, and leverage differences in learning styles: visual, auditory, reading and writing, and kinesthetic.
- Workers and supervisors should be trained on how to activate emergency response (call 911 or appropriate on-site emergency response number).
- Speed of onsite response to HRI is crucial – both in activating emergency response and providing immediate onsite cooling.
- Utilize near misses, first aid case reporting, etc. as a learning opportunity to further drive heat awareness.
- Provide urine color charts and as lanyard accessories to assist in monitoring for signs and symptoms of dehydration.
- Ensure managers and supervisors have an understanding of work site blind/risk zones--less frequently visited areas on the work site or areas that are a long distance away from the nearest rest station/area.
- Rest stations should be placed close to the work area.
- Provide directional signage and posters to cool rest areas/stations.
- Strategically place rest areas around work sites and ensure they are easily accessible by foot and/or vehicle traffic.
- Employ frequent musters to account for all workers.
- Workers and supervisors should be trained on treatment of HRI including supplies and equipment requirement.
    - Encourage light weight, light-colored and loose-fitting clothing.
    - If employing cooling vests, be mindful that some may be heavy, bulky and limit ease of mobility.
    - Ensure adequate water availability (personal canteens, coolers, etc.) and encourage adequate water intake.
- Recognize and understand business expectations and constraints, such as ambitious schedules, budgets, and contractual agreements, may conflict with heat stress awareness and mitigation plans.

- Encourage audits and site walks by managers:
    - Helps to ensure visibility and heat awareness with emphases on shade, water, rest, emergency response, etc.
    - Helps to mitigate the risk of *ivory tower* and communication gaps between management and front-line workers.
- Meals:
    - Stress the importance of a healthy breakfast, particularly during fasting periods.
    - Encourage small meals as opposed to large food intake.
    - Recognize and understand increased risk of HRI during periods of fasting.
- Recognize common cognitive biases and their associated risk. Some examples:
    - <u>Overconfidence bias</u>: can be an issue if work force is driven to place themselves or others at risk.
    - <u>Status quo basis</u>: can be an issue during a lull.
    - <u>Confirmation bias</u>: can be an issue when evaluating an individual for heat stress (e.g., Given the individual is alert and oriented and only has no or few complaints, etc. then erroneously allowing this person to RTW.)

Appendix B – Examples of Screening Questionnaires

Heat Stress Questionnaire

Name: (first, last) ______________________________**Employer:**______________ **Job Title:** ____________________

DOB: _________________ **Age:** ________ **Height:** ________ **Weight:** ________ **BMI:** ________

Are you taking any of these medication or substances ? Some medications may increase or block sweating.

Heart Medications	Yes___ No___	Sleeping / Insomnia	Yes___ No___
Blood Pressure (diuretics)	Yes___ No___	Depression/Mood (lithium)	Yes___ No___
Asthma/COPD	Yes___ No___	Anticholinergic (bladder/dizziness)	Yes___ No___
Allergy (Benadryl)	Yes___ No___	Nicotine products	Yes___ No___
Alcohol	Yes___ No___	Cocaine, amphetamines	Yes___ No___

Please list medication names including over the counter medications or drug use.

____

____

Do you have any of these conditions that may increase risk of heat related illness?

Kidney disease	Yes___ No___	Previous Heat-related illness?	Yes___ No___
Heart disease	Yes___ No___	Are you trying to lose weight?	Yes___ No___
High blood pressure	Yes___ No___	Severe burns requiring hospitalization?	
Diabetes	Yes___ No___		Yes___ No___
Asthma/COPD	Yes___ No___	Are you pregnant/ planning a pregnancy (females) ?	
Neurologic disorder	Yes___ No___		Yes___ No___
Thyroid disorder	Yes___ No___	Are you exposed to physical / chemical hazards?	
Skin disease (extensive)	Yes___ No___		Yes___ No___

Do you have a second job/occupation in a hot environment? Yes___ No___

If "Yes" to any of the above, please describe:
____

Employee signature: ______________________________ Date: ____________________

Clinician name and signature: _____________________________________ Date: _____________

Instruction to Clinicians: Employees with one or more risk factors -Discuss with employee why employee at increased risk for heat-related illness, importance of being aware of signs and symptoms of heat stress and when to seek medical attention.

Employee with uncontrolled health condition on exam or recent heat-related illness- restrict from work in hot environment until health condition stabilized. Recheck to confirm health condition stabilized before returning employee to work in a hot environment.

Sample Heat Stress Screening Questionnaire:

Employee Name: ______________________________ Job Title: ____________________

Medical History:

Have you ever had or do you now have:	Yes	No
Rheumatic Fever	___	___
Chest pain or pressure	___	___
Heart trouble or heart attack	___	___
Heart Surgery	___	___
High blood pressure	___	___
Kidney trouble	___	___
History of heat intolerance, heat-related disease (including heat exhaustion or heat stroke)	___	___
Diabetes	___	___
Convulsions or epilepsy	___	___
Shortness of breath, asthma, emphysema, other lung problem	___	___
Currently pregnant	___	___
Present illness or injury	___	___

Explain "Yes" answers:

____

____

____

List any medications you are using, including over-the-counter medications:

____

____

Employee signature: _____________________________________ Date: ___________________