
	GILES CHEMICAL ~ PREMIER MAGNESIA		
	Company Policy		
	Title: Heat Stress Prevention Policy	Number: S14-PL-200-003	
	Owner: Deborah Durbin	Revision: 0	
	Effective Date: May 16, 2014	Page: 1 of 6	

1.0 Purpose

The purpose of this procedure is to reduce the risk of illness, injury, or death for those individuals in production who work during elevated temperatures that create a hot environment and are susceptible to heat-related illnesses. This procedure will help employees understand how heat affects the body, how to recognize the signs and symptoms of heat-related illnesses and what steps to take in the case of a heat-related illness.

2.0 Scope

This procedure shall apply to all employees, visitors or contractors performing any job or process where conditions can potentially cause a rise in their deep core temperature increasing the risk of heat stress.

3.0 Responsibility

Safety Department:



- i. Provide annual training to employees on heat risk exposure, heat-related illnesses and preventive measures against heat stress.
- ii. Ensure appropriate engineering and administrative controls are implemented to minimize heat load on employees.
- iii. Monitor the workplace for heat stress risk and recommend ways to manage exposure to heat.
- iv. Investigate any accidents that occur as a result of heat-related illnesses.
- v. Enforce the Heat Stress Prevention policy is being followed and revised periodically.

Supervisors:

- i. Recognize heat stress and risk factors.
- ii. Provide fluid replacement for employees when working under hot conditions.
- iii. Identify those workers whose job duties require extensive physical activity or place them at risk for suffering a heat-related illness.
- iv. Provide specialized clothing that may decrease heat load on workers.
- v. Use engineering controls such as fans and air conditioned break room to reduce heat load.
- vi. Implement work practice controls such as periodic rest breaks, job rotations, work scheduling, or other practices that can help prevent heat stress.

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Employees:

- i. Follow all instructions given to reduce risk of heat-related injury.
- ii. Monitor themselves and coworkers for signs of heat-related illness.
- iii. Promptly report any known or suspected unsafe conditions, unsafe procedures or heat-related illnesses to their supervisor; an *Accident-Injury Report (S12-PR-200-F002)* will be filled out.

4.0 Safety Considerations

Safety is a condition of employment. Employees are not authorized to work in an unsafe manner and are prohibited from harming the environment of the facility or community.

5.0 Materials/Equipment

N/A

6.0 Procedure



Heat related illnesses are influenced by several factors, such as: climate and environmental conditions, demands of the work, clothing and personal characteristics. Environmental factors include air temperature, air movement, humidity and radiant heat. Personal characteristics include such factors as age, weight, gender, fitness level, medical condition(s), metabolic heat, diseases, water and salt balance, and medication the employees are taking.

The human body regulates high temperatures by two primary mechanisms: blood flow and sweating. Blood is circulated to the skin, increasing the skin temperature and allowing the body to give off the excess heat through the skin. Sweating occurs when the body senses that the heat loss due to increased blood circulation is not enough to cool the body. Evaporation of the sweat cools the skin and eliminates large quantities of heat from the body. If the body is unable to release excess heat, it will store it. When this happens, the body's core temperature rises and the heart rate increases. If the body continues to store heat the person may begin to have difficulty concentrating, may become irritable and lose the desire to drink. The next stage is often fainting which would signal a medical emergency.

Listed in the Table below are common heat disorders with accompanying symptoms and appropriate first aid measures.

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Condition	Signs/Symptoms	First Aid
Heat Cramps	Painful muscle spasms Heavy sweating	Increase Water intake Rest in shade/cool environment
Heat Syncope	Brief fainting Blurred vision	Increase Water intake Rest in shade/cool environment
Dehydration	Fatigue Reduced movement	Increase Water intake Rest in shade/cool environment
Heat Exhaustion	Pale and clammy skin Possible fainting Weakness, fatigue Nausea Dizziness Heavy sweating Blurred vision Body temp slightly elevated	Lie down in cool environment Water intake Loosen clothing Call 911 if symptoms continue once in cool environment.
Heat Stroke	Cessation of sweating Skin hot and dry Red face High body temperature Unconsciousness Collapse Convulsions Confusion or erratic behavior Life threatening condition	Medical Emergency! Call 911 to summon ambulance Move Victim to shade, immerse in water



CONTROL OF HEAT STRESS:

The following engineering and administrative controls will be followed to prevent heat-related disorders:

1. **Engineering Controls:** Heat is controlled through general ventilation and spot cooling by local exhaust ventilation. Other control measures include opening windows/doors or using fans to create airflow. Outdoor rest areas are shaded.
2. **Acclimatization:** Employees need to adapt to new temperatures. This adaptation period is usually 5 days. New employees and employees returning from an absence of two weeks or more should have a 3-5 day period of acclimatization. This period should begin with 50% of the normal workload the first day and gradually build up to 100% on the last day.

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3. **Weather Conditions:** Check weather conditions frequently during the day and adjust the work schedule. It might be appropriate to change the actual hours of work to minimize working during the heat of the summer months. Heavy work should be scheduled for the cooler hours of the day. Non-essential tasks should be postponed when there is a heat warning issued.
4. **Work/Rest Cycles:** Heavy and minimal work activities will be alternated. Tasks should be rotated among workers. Employees will be allowed sufficient breaks in a cool area to avoid heat strain and promote recovery. Shaded and air-conditioned break rooms are provided.
5. **Personal Protective Equipment:** During work when the environment is hot, employees should use the lightest weight or “breathable” protective garments that give adequate protection. This may include the wearing of shorts if this does not create a hazard for the legs. The clothing should be light colored. For work in extremely hot environments, cool vests and neck scarves are available from the Safety Department. These items typically provide 1-2 hours of cooling, recharge in 20 minutes, and maintain a constant temperature of 55°F.
6. **Fluid Intake:** Fluids, such as water or electrolyte replacement drinks (i.e. Gatorade), are conveniently available; employees are encouraged to drink approximately 8 oz. of liquids every 20 minutes. The ideal temperature for liquids should be 50°F- 60°F. Drinks are not allowed on the production floor. Alcohol, coffee, tea, and caffeinated sodas should be avoided, since these increase dehydration and interfere with heat loss.



MEASURING BURDEN of HEAT on WORKERS:

Every employee who works in extraordinary conditions that increase the risk of heat stress should be personally monitored. These conditions include wearing semi permeable or impermeable clothing (ie. acid suits) when the temperature exceeds 21°C (69.8°F), working at extreme metabolic loads (greater than 500 kcal/hour), etc. Personal monitoring can be done by checking the heart rate, recovery heart rate, oral temperature, or extent of body water loss.

Heart rate is one of the most reliable indices of heat stress. The heart rate of a worker encompasses the combined demands of work level, body temperature elevation, environmental heat, and cardiovascular fitness. Heart rate increases disproportionately with heat load. A heart rate of 180 to 200 beats per minute is the maximum capacity for adults. A good rule of thumb is as follows: count the pulse rate for the last 30 seconds of the first three minutes after rest begins. If the first pulse (measured for 30-60 second) is

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maintained at 110 beats per minute, no increasing stress has occurred as the work progresses. If the pulse rate is higher than 110 beats per minute after measuring the pulse during this period, then there is a possibility that the employee is experiencing some heat stress.

Oral temperature can be checked with a clinical thermometer after work but before the employee drinks water. If the oral temperature taken under the tongue exceeds 37.6°C, shorten the next work cycle by one third.

Body water loss can be measured by weighing the worker on a scale at the beginning and end of each work day. The worker's weight loss should not exceed 1.5% of total body weight in a work day. If a weight loss exceeding this amount is observed, fluid intake should increase.

Contact the supervisor or a Safety Department representative should there be a need for personal monitoring.

MEASURING THE ENVIRONMENT:

The environmental temperature and humidity in the production areas are recorded on the *Temperature and Humidity Log Sheet (R13-FM-100-052)* daily and multiple times throughout the day during the hot weather months. These logs are maintained and filed by the Safety Department.

RECORDKEEPING:

The Safety Department will maintain a copy of all training records for a minimum of three years and any *Accident-Injury Reports* concerning heat stress related injuries indefinitely.



TRAINING AND INFORMATION REQUIREMENTS:

After completing Heat Stress training, employees should understand:

- The seriousness and prevalence of heat stress
- How the body's internal cooling system handles heat
- How hot environments increase the likelihood of accidents
- How and why the body's internal cooling mechanisms may fail
- The types of heat-related illness they or co-workers most likely face on the job, including their causes, common symptoms and treatment/first aid
- The environmental factors (such as air temperature, radiant heat, humidity and air movement) in a given work area which should cause heightened alert for signs of heat illness

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- The work-related factors that increase the risk of heat-related illness (such as type of work, level of physical exertion required, duration of activity and required protective clothing or gear)
- Unique personal factors (such as age, weight, alcohol/caffeine use, history of heat-related illness, etc.) that can put them at increased risk
- Basic preventative measures workers can take to reduce the risk of heat stress

7.0 Reference Documents

Accident-Injury Report (S12-PR-200-F002)
Temperature and Humidity Log Sheet (R13-FM-100-052)

8.0 Change Information

New document

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