TITLE: Guidelines for Preventing Heat Stress

NUMBER: BUL-963.2

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School Operations, Office of the Superintendent

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Student Health and Human Services

DATE: August 18, 2014

ROUTING
All Employees
All Locations

POLICY: To counteract heat stress, all District personnel must pay attention to weather conditions and use common sense and good judgment for modifying activities and/or school days. This policy applies to all school sponsored activities.

MAJOR CHANGES: This bulletin replaces BUL 963.1 of the same subject, issued by Student Health and Human Services, dated January 24, 2011. The content has been updated according to the most recent information available, including references.

GUIDELINES: I. Introduction

Heat stress is the overall effect of excessive heat on the human body. The body dissipates heat in various ways: by increasing blood circulation, by losing water through sweating, and as a last resort, by panting or altering breathing. When heat gain exceeds the level the body can remove, body temperature begins to rise, and heat related illnesses and disorders may develop.

Those at highest risk are the very young, the elderly, people with acute or chronic health problems, and people using certain medication or taking illicit drugs. For various reasons, not all people tolerate heat to the same extent.

Heat Index is a measure of how hot it really feels when relative humidity is factored with the actual air temperature. High relative humidity slows evaporation of water, and therefore counteracts the cooling mechanism of sweating. Most heat alert procedures are based on the Heat Index, rather than just temperature. To estimate the Heat Index using temperature and relative humidity, look at the Heat Index Chart (Attachment A) or go to http://www.nws.noaa.gov/om/heat/index.shtml. The National Oceanic and Atmospheric Administration **(**NOAA**)** is a federal agency focused on the condition of the oceans and the atmosphere. For local and forecasted temperature and humidity, go to the NOAA website at http://www.hpc.ncep.noaa.gov/html/heatindex.shtml and type in the local zip code. Local news reports on radio and television also carry this information.

To counteract heat stress, all District personnel must pay attention to these contribution factors:

- air temperature
- humidity
- air circulation
- radiant heat
- air pollution
- classroom temperature
- classroom location
- medical problems and use of medications
- fluid intake
- appropriate clothing
- physical conditioning
- acclimation to heat
- intensity, type and duration of exercise

II. Weather Conditions For Modifying Classroom Activities or School Day

The Office of Environmental Health and Safety will provide advisories upon receipt of heat alert notices from the local public health department and may send additional information during periods of inclement weather; however, all schools and offices must comply with this Policy Bulletin regardless if an advisory has been distributed.

The decision to modify school activities will be made by the school principal after consulting with the Local Educational Service Center, Administrator of Operations who may consult with the Assistant Superintendent School Operations.

Attachment B provides a guideline for consideration in modifying instructional programs, physical activity, and school schedules based on the Heat Index.

Please Note:
Students with certain health problems may require more attention. If students complain about the heat, allow them to rest and inform the school nurse who may want to have their health status clarified by a parent or guardian.

Employees with specific health problems making them more sensitive to heat should alert the site administrator.

On very hot, humid days, administrators, teachers, and other staff should be aware of the following procedures to help minimize possible heat stress:

A. Faculty and staff must be informed at the beginning of each semester/track, and as needed thereafter, about the school's program for preventing heat stress, and the most efficient methods for reducing heat and maximizing ventilation in classrooms.

B. Doors and windows must be closed in air-conditioned rooms, and any air-conditioning equipment malfunction should be reported at once.

C. When possible, all air-conditioned rooms should be used as classrooms.

D. Non-air conditioned classrooms should be surveyed by teacher or principal's designee when temperatures require that maximum cooling efforts be instituted, including:
   - Windows, doors, casements, and venetian blinds should be adjusted for maximum ventilation and air circulation.
   - Electric fans, where available, should be placed to bring in fresh air and exhaust stale air rather than just blowing it around the room. Fans should be placed in or next to an open window at one end of the room to bring in air, and a window or door (not one that opens into a hall) at the opposite end of the room should be opened to exhaust air. For rooms with unusual heat problems, installing an electric fan in one window or casement and covering the opening with a security screen should be considered. Fans should be turned on as early as possible.
   - Adjusting custodial hours should be considered to permit early entry into classrooms to open doors, windows, casements, and turn on fans.
   - Precautions should be taken to ensure that when fans, coolers, or other devices are used they meet safety standards and that cooling strategies do not place an overload on existing electrical systems.

E. When classroom temperatures exceed 91° F, consideration should be given to moving students to cooler rooms or other appropriate areas, such as the auditorium, multipurpose room, library, or shaded outdoor areas. When possible, classes should be combined in air-conditioned rooms not to exceed the occupancy load.

F. Teachers, especially at the elementary level, may adjust their programs to use the cooler early hours for physical activity.

G. Water must be available. Personal water containers are recommended for use when heat is excessive as a means to prevent dehydration. Use at other times should be a local school option. School sites and secondary physical education departments should establish policies for use of water containers and inform students and parents.

   A personal water container is a firm, non-breakable plastic receptacle which is no more than 9" high and 4" wide that will hold no more than 32 ounces of water. The container may have a pressure seal, screw or pop-up cap, or a straw drink device on its top. The use of all other types of personal water containers is prohibited. The following are recommended precautions:
   - For health reasons, water containers should not be shared.

- For safety reasons, 1) students should not run with straws or containers in mouth, and 2) containers may not be used while riding District buses.
- Students should not bring containers to physical education activity areas unless given permission by the physical education teacher.

H. Staff and all personnel supervising physical activities, including Youth Services personnel, should observe students during activity periods and modify activities as recommended in Attachment B. Students known to have health problems should be closely observed and their activity modified or restricted.

III. Weather Conditions For Modifying Athletic Activities

During times of excessive heat, the following precautions need to be taken for outdoor physical activity which includes recess, physical education, recreation, and competitive sports:

A. **The intensity of exercise activities must be limited or they must be modified whenever the Heat Index is above 91°. See Heat Index table (Attachment A).**

B. Air Quality Advisories issued by the South Coast Air Quality Management District (SCAQMD) must be followed. The Office of Environmental Health and Safety will provide informatives based on SCAQMD's advisories. Please contact the Office of Environmental Health and Safety for more information.

C. Adequate water must be available. If adequate water is not available, physical activity must be modified. Prior to prolonged physical activity, a person should be fully hydrated. During the activity, periodic drinking of water every 15 to 30 minutes should be encouraged. Use of commercially available replacement fluids for athletes are not usually necessary unless heat index risk level is high or practice/competition is lengthy. Sugary and caffeinated beverages can cause dehydration. Carbonated beverages may cause abdominal pain. Salt tablets are not advised.

If water fountains are not located near the place of activity, large urns from the cafeteria may be filled with water and placed in strategic locations. Do not use irrigation systems for drinking water such as hose bibs and quick coupler valves.

D. Proper clothing should reflect heat, permit freedom of movement, and allow free perspiration. Clothing should be light colored, lightweight, loose, and limited to one layer of absorbent material in order to facilitate evaporation of sweat and expose as much skin as possible, yet still be appropriate for the school environment.

Sweat-saturated garments should be replaced by dry ones. Rubberized sweat suits should never be used to produce loss of weight. Sunscreen, proper clothing, and hats should be used to prevent sunburn.

E. Staff and all personnel supervising physical activities, including Youth Services personnel, should observe students during activity periods and modify activities as recommended in Attachment B. Students known to have health problems should be closely observed and their activity modified or restricted.

F. Teachers must observe students closely and know signs and symptoms of heat stress, emergency first aid, and how to obtain medical help. (See Attachment C).

G. The intensity and duration of a strenuous exercise program should be adjusted initially for students who are not acclimated to the climate. The intensity and duration of the program can then be gradually increased over a period of 14 days to allow the students to adapt to the effects of heat.

H. Marked differences between indoor and outdoor temperatures may precipitate physical problems.

I. Secondary and adapted physical education teachers should modify the type, duration, and intensity of exercise. For suggestions refer to the appropriate Elementary and Secondary Physical Education Curriculum guide.

J. Rest periods should be provided during activity.

K. Activities must be followed by the proper cool-down (for example, jogging should be followed by walking) and rest.

L. Athletes engaging in competitive sports must have their activities closely observed for all of the above considerations.

IV. Strategies for Preventing Heat Stress During the School Day

A. Each school should review this bulletin with their staff on an annual basis. Teachers, staff, parents, and students should be instructed by school nurses regarding awareness of signs and symptoms and first aid for problems attributable to excessive heat. Teachers should explain precautions to students.

B. A “cool room” should be established for use by students showing early signs of heat stress. This room should provide maximum coolness possible. During an emergency, if an air-conditioned classroom is to be used as a “cool room” and is occupied by students, the students should be moved to another location. During excessive heat the “cool room” should be available for use

at all times during the school day.

If possible, the "cool room" should be located near restrooms and should be equipped with chairs, cots, or mats; running water or adequate amounts of cool dispensed water; telephone or functioning communication with the main office; refrigerator or ice chest with ice and cold compresses; and basic first aid supplies. It should be supervised by staff trained to recognize signs and symptoms of heat stress and administer first aid.

Students showing any signs of heat stress should be cared for using the guidelines in Attachment C.

C. Prior to boarding buses, traveling students should be encouraged to drink water and be given time to drink cool water located near the pickup areas. For safety reasons, personal water containers may not be used while riding District buses. When the Heat Index is 91° or greater, schools may consider providing large moist towelettes for use by students.

D. When planning an outdoor event such as graduation, educational fairs, health fairs, etc. that cannot take place indoors, certain precautions need to be addressed:
- If possible, plan outdoor events around the coolest part of the day. For example, plan outdoor graduations in the early morning or early evening.
- Adequate shaded areas should be available to prevent heat exhaustion or heat stroke. This can be met by providing canopies, preferable near a restroom.
- Under the shaded area: chairs, cots, an adequate water supply, an ice chest with ice and cold compresses, and first aid supplies must be available.
- This area should be supervised by staff trained to recognize symptoms of heat exhaustion and heat stroke and administer first aid.
- Participants in these activities should be notified to wear appropriate clothing, hats, and sunglasses and to bring liquids and snacks as appropriate.

V. Strategies For Preventing Heat Stress During Athletic Practice and Competition

1. Conditioning period: It is recommended that all sports have a fourteen (14) day acclimatization period of pre-practice progressive conditioning prior to more strenuous and sport specific practices to develop the level of conditioning necessary for more strenuous and stressful workouts. Pre-conditioning workouts should incorporate strength, endurance, speed, plyometric, agility and flexibility training in a progressively and structured program.

2. Progressive build up to acclimate to extreme heat conditions should include:
   a. Shorter workouts
   b. Reduce pace of workout
   c. Reduced required equipment
   d. Modify drills
   e. Increase breaks between work periods
   f. Plenty of ice water available during practice
   g. Cooling areas
   h. Educate students and coaches on pre-hydration and adequate hydration during activity.
   i. Postpone or schedule practice session during cooler period of day.
   j. It is recommended that football not be allowed to have two-a-day workouts.

3. Include information and strategies for preventing heat related injuries at annual coaches meeting. This presentation would include:
   a. causes of heat related injuries
   b. hydration and preventive strategies
   c. using the Heat Index ranges to identify activity recommendations and modification strategies.

4. Use current medical health history and physical to identify students susceptible to or at high risk for heat related injuries. Students identified as high risk should be removed from participation at a lower Heat Index. These would include:
   a. Students with history of previous heat illness
   b. All current illnesses and/or health sensitive medical conditions
   c. Students who have experienced recent injuries

RELATED RESOURCES:

Data used in this bulletin was adapted in part from:

1. American Academy of Pediatrics (2011). Policy Statement—Climatic Heat Stress and Exercising Children and Adolescents. Pediatrics. 128 (3) 741-7.

2. American College of Sports Medicine Position Stand: Exercise and Fluid Replacement (2007). Med: Sci Sport Exercise. 384-86.

3. Casa, DJ, et al (2012). National Athletic Trainers' Association Position Statement: Preventing Sudden Death in Sports. Journal of Athletic Training. 47 (1) 96-118.

4. Casa DJ, Csillan D (2009). Inter-Association Task Force for Preseason Secondary School Athletics: Preseason Heat-acclimatization Guidelines for Secondary School Athletics. Journal of Athletic Training. 44 (3) 332-333.

5. National Collegiate Athletic Association (NCAA); Guideline 2c,"Prevention of Heat Illness," Revised June 2010.

6. National Federation of State High School Associations. April 2012; "Heat Acclimatization and Heat Illness Prevention Position Statement."

ASSISTANCE: For assistance or further information, please contact the Director, Student Medical Services at (213) 202-7584; Director, Interscholastic Athletics, at (213) 241-5847 or the Office of Environmental Health and Safety at (213) 241-3199.

Attachment A

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Note: *Exposure to full sunshine can increase HI values by up to 15° F*

As an example, if the air temperature is 96°F (found on the top of the table) and the relative humidity is 65% (found on the left of the table), the Heat Index--how hot it feels--is 121°.

ATTACHMENT B

Precaution and Modification Guidelines for Classroom and Physical Activity based on the Heat Index

***Please note: Heat Index temperature IS NOT the same as regular (thermometer) temperature. For definition of Heat Index and/or more information, please go to www.noaa.gov.

HEAT INDEX RISK LEVEL	Outdoor Instructional Activities and Protective Measures	Precautions and Practice Lengths	SUGGESTED Fluid Intake
Under 91°F Lower (caution)	Provide *heat safety training* for staff annually. Have an *emergency action plan* in place. Learning skills decrease with long exposure to Heat Index above 91°.	Educate students about preparing for the heat. Use Caution for practice sessions and monitor on basis of risk factors.	Provide drinking water. Fluid Replacement beverages should be easily accessible in single containers to permit monitoring of fluid intake. Allow athlete to carry water bottles of hydration system when practical.
91 to103°F Moderate	Wear loose-fitting, light colored, lightweight clothing; wide brimmed hat; sunglasses and sun screen (SPF 15 or higher "UVA/UVB") during outdoor activities. Increase room ventilation (open windows/doors, use fans); provide wet wipes, damp clothes and/or spray bottles to cool forehead, arms, legs, and face. Instruct staff to monitor students closely.	Decrease physical activity at recess and in PE classes. Limit outdoor activity to cooler morning hours. Allow frequent breaks in cool, shaded area. Acclimatize student athletes over a period of 14 days i.e. introduce protective equipment in phases; modify practice lengths and intensity level. Set-up a buddy system.	Encourage students to bring water bottles Take frequent water breaks before, during and after exercise (about 4 cups/hour). Athletes should consume apx. 17-20 fl oz of water 2-3 hours before exercise and 7-10 fl oz of water 10 to 20 minutes before exercise. Fluid replacement should occur every 10-20 minutes at 7-10 fl. oz.
103° to 115°F High	Alert staff of High Risk conditions. In addition to the steps listed above: move students/staff to cooler areas of the building, as often as necessary, to avoid being in the above 90° Heat Index areas for longer than 60 to 90 minutes at a time. Limit physical exertion. Use cooling techniques. Ensure trained staff is available on-site to monitor for and promptly treat heat illness.	If possible, events should be rescheduled or delayed until safer conditions prevail. If the event must take place, be on high alert. Take steps to reduce risk factors (e.g., more and longer rest breaks, reduced practice time, reduced exercise intensity, access to shade, minimal clothing and equipment, cold tubs at practice site, etc.). Heat index should be rechecked every 30 minutes.	Mandatory water breaks every 20 minutes for 10 minutes in duration. Traditional sports drinks with appropriate carbohydrate (CHO) and sodium may provide additional benefit for the athlete. A 6-8% addition of CHO to water is the maximum that should be utilized. All fluids should be cold to optimize gastric emptying.
Greater than 115°F Very High to Extreme	All of the above and immediately move the students/staff to cooler areas of the building. If there are no suitable locations, immediately contact the Office of Environmental Health and Safety (OEHS). Determine what actions to initiate, including the possible dismissal/ modification of school.	Alert students/staff of Extreme Heat Hazard Risk. No Practice. Heat Index should be rechecked every 30 minutes.	All students must have water readily available to them.

ATTACHMENT C

Heat Related Illness, Signs/Symptoms and Treatment

Heat Illness	Definition/Description	Signs/Symptoms	First Aid / What to Do
Heat Cramps	Occurs during or after intense exercise. Athlete will experience acute, painful, involuntary muscle contractions typically in the arms, legs, or abdomen.	Dehydration Thirst Fatigue Sweating Muscle cramps	• Stop all activity and sit quietly in a cool place. • Drink lukewarm water or a sports drink. • Do not engage in exercise/strenuous activity for a few hours after cramps subside, as this may lead to heat exhaustion or heat stroke. • Seek medical attention if heat cramps do not subside in 1 hour. Apply firm pressure on cramping muscles.
Heat Syncope	Occurs as result of exposure to high temperatures. Typically occurs during the first 5 days of acclimation to physical activity in the heat. May also occur after a long period of standing after physical activity.	Dehydration Fatigue Fainting Lightheadedness Tunnel Vision Pale or sweaty skin Decreased pulse rate	• Lie down in a cool place. • Drink sips of water or a sports drink. • **Seek medical attention** if symptoms persist or are severe, the athlete has existing heart problems or high blood pressure
Heat Exhaustion	The inability to continue exercising that is associated with heavy sweating, dehydration, energy depletion, and sodium loss. *Frequently occurs in hot, humid conditions	Normal or elevated body-core temp (97-104°F) Weak pulse Dizziness/Lightheadedness Headache Nausea/Vomiting/Diarrhea Weakness Possible muscle cramps Profuse sweating Fainting Chills/Cool, clammy skin	• **Seek medical attention immediately** if symptoms are severe, the athlete has existing heart problems or high blood pressure. • You may attempt to cool the athlete by applying cooling measures: rest, apply cool wet cloths or shower/bath/sponge bath if possible, fan and move to an air conditioned or cooler environment, and loosen clothing. Give sips of water or a sports drink.
Heat Stroke	Life-threatening unless promptly recognized and treated. Occurs as a result of prolonged heat exposure while engaging in physical activity. Symptoms are a result of the body shutting down when it is no longer able to regulate temperature naturally.	Same Symptoms as Heat Exhaustion and High body-core temp (>104°F) Altered mental state Change in mood (e.g., apathy, irrational) Hot and wet or dry skin Increased heart rate Confusion Possible throbbing headache Shallow breathing Rapid pulse Possible unconsciousness	• **Heat stroke is a severe medical emergency. Summon emergency medical assistance or get the victim to a hospital immediately. Delay can be fatal. CALL 911.** If medical attention is delayed, call the emergency room for further instructions. • Move the athlete to a shady area. • Cool the athlete rapidly using whatever methods you can: immerse the victim in a tub of cool water; place the person in a cool shower, spray the victim with cool water from the hose, sponge the person with cool water; fan the athlete. Continue to cool the athlete until temp drops to 101-102°F. • Continue until medical professionals arrive and take over.

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