

ROSEVILLE JOINT UNION HIGH SCHOOL DISTRICT

Heat & Air Quality Athletic Guidance

(Adapted from CDPH Heat Guidance & AirNow.gov)

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TABLE OF CONTENTS	
Topic	Page
RISK OF EXERCISING DURING EXTREME HEAT	3-4
PROTECTING SCHOOL COMMUNITIES FROM EXTREME HEAT	4-5
USING THE “HEATRISK” FORECAST TO DETERMINE HEAT RISK LEVEL	5-7
WHEN TO CANCEL SPORTS AND OTHER STRENUOUS ACTIVITIES (HEAT)	7-8
PREVENTION OF HEAT ILLNESS	8-9
IDENTIFICATION AND TREATMENT OF HEAT RELATED ILLNESSES	9-10
POOR AIR QUALITY	11
DETERMINING AIR QUALITY IMPACT LEVELS	11
AIR QUALITY INDEX (AQI) GUIDANCE AND ACTIONS	12
OUTDOOR PHYSICAL ACTIVITY DURING POOR AIR QUALITY	13

Risk of Exercising During Extreme Heat

Climate change is leading to higher temperatures, more often, and of longer duration – and high temperatures can kill. Heat-related deaths and illnesses are preventable, yet more than 700 people die from extreme heat every year in the United States.[1] Among teenage athletes, heat-related illness (or heat illness), is a leading cause of death.[2] All youth and student athletes are susceptible to the risks of exercising in a hot environment, particularly those participating in high-exertion sports.

Key Take-Aways:

- Know your location's "HeatRisk" level to determine who is at risk and what actions to take. Find your HeatRisk level here: [National Weather Service \(NWS\) HeatRisk forecast](#). The NWS HeatRisk tool provides a seven-day forecast of the potential level of heat risk for a specific location.[4] For guidance on actions to take, see the next section.
 - **HeatRisk Levels:**

Value	Risk of Heat-Related Impacts
0 (Green)	Little to no risk from expected heat.
1 (Yellow)	Minor - This level of heat affects primarily those individuals extremely sensitive to heat, especially when outdoors without effective cooling and/or adequate hydration.
2 (Orange)	Moderate - This level of heat affects most individuals sensitive to heat, especially those without effective cooling and/or adequate hydration.
3 (Red)	Major - This level of heat affects anyone without effective cooling and/or adequate hydration.
4 (Magenta)	Extreme - This level of rare and/or long-duration extreme heat with little to no overnight relief affects anyone without effective cooling and/or adequate hydration.

Source: NWS [HeatRisk](#): Understanding HeatRisk

- Be aware that multiple days of extreme high temperatures will make students and athletes more vulnerable to heat illness.
- Always monitor for exertional heat illness. Air temperature, humidity, direct sunlight, and other factors can increase risk of heat illness. See below for more information.
- Be aware that exertional heat stroke is life-threatening. Exertional heat stroke (EHS) can occur within the first 60 minutes of exertion and may be triggered without exposure to high ambient temperatures.[4] Learn more below about how to recognize and properly treat EHS, and ways to prevent it. Other heat-related illnesses include heat exhaustion,

heat cramps, sunburn, and heat rash.[5] For more information about heat-related illnesses, please see the relevant sections below.

- Proceed with extra caution in scenarios where extreme heat occurs suddenly, lasts an extended period of time, and/or reaches new high temperatures. Generally, in these scenarios, very few outdoor activity participants (or those participating in indoor spaces without cooling) are “acclimatized.” Heat acclimatization is the body's process of adapting to or “getting used to” the heat that occurs gradually (usually requiring 1 to 2 weeks) when a person is exposed to a hotter setting. Students and athletes face higher risk of heat illness when they are not acclimatized to hotter and/or more humid conditions. Certain geographic areas (such as coastal areas) not accustomed to higher temperatures will have more persons that are not acclimatized. See below for more information on heat acclimatization.

Protecting School Communities from Extreme Heat

Start by determining your school community’s risk of heat impacts. Use the [National Weather Service \(NWS\) HeatRisk forecast tool](#) to find your location’s risk level.

Once you determine the HeatRisk level, **use the [CDPH Heat Risk Grid](#) (PDF link) to understand what each risk level means, who is at risk, and what general actions can be taken** to protect those in your school community.

CDPH Heat Risk Grid: Understanding “HeatRisk” Level, Who is At Risk, and What Actions to Take

Revised July 27, 2023. Adapted from the [National Weather Service \(NWS\) HeatRisk tool](#). Learn more about how to stay safe during extreme heat at [CDPH Extreme Heat](#).

Value	Risk	What does this mean?	Who / What is at risk?	What actions can be taken?
0 (Green)	Little to None	<ul style="list-style-type: none"> • This level of heat poses little to no risk from expected heat 	<ul style="list-style-type: none"> • No elevated risk 	<ul style="list-style-type: none"> • No preventative actions necessary
1 (Yellow)	Minor	<ul style="list-style-type: none"> • Heat of this type is tolerated by most; however, there is a minor risk for extremely heat-sensitive groups* to experience negative heat-related health effects 	<ul style="list-style-type: none"> • Primarily those who are extremely sensitive to heat,* especially when outdoors without effective cooling and/or adequate hydration 	<ul style="list-style-type: none"> • Increase hydration • Reduce time spent outdoors or stay in the shade when the sun is strongest • Open windows at night and use fans
2 (Orange)	Moderate	<ul style="list-style-type: none"> • Heat of this type is tolerated by many; however, there is a moderate risk for members of heat-sensitive groups* to experience negative heat-related health effects, including heat illness • Some risk for the general population who are exposed to the sun for longer periods of time • Living spaces without air conditioning can become uncomfortable during the afternoon and evening, but fans and leaving windows open at night will help 	<ul style="list-style-type: none"> • Primarily heat-sensitive or heat-vulnerable groups,* especially those without effective cooling or hydration • Those not acclimatized to this level of heat (i.e., visitors) • Otherwise healthy individuals exposed to longer duration heat, without effective cooling or hydration, such as in the sun at an outdoor venue • Some transportation and utilities sectors • Some health systems will see increased demand, with increases in emergency room visits 	<ul style="list-style-type: none"> • Reduce time in the sun during the warmest part of the day • Stay hydrated • Stay in a cool place during the heat of the day (usually 10 a.m. to 5 p.m.) • Move outdoor activities to cooler times of the day • For those without air conditioning, use fans to keep air moving and open windows at night to bring cooler air inside buildings
3 (Red)	Major	<ul style="list-style-type: none"> • Heat of this type represents a major risk to all individuals who are 1) exposed to the sun and active or 2) are in a heat-sensitive group • Dangerous to anyone without proper hydration or adequate cooling • Living spaces without air conditioning can become deadly during the afternoon and evening. Fans and open windows will not be as effective. • Poor air quality is possible • Power interruptions may occur 	<ul style="list-style-type: none"> • Much of the population, especially anyone without effective cooling or hydration • Those exposed to the heat/sun at outdoor venues • Health systems likely to see increased demand with significant increases in emergency room visits • Most transportation and utilities sectors 	<ul style="list-style-type: none"> • Cancel outdoor activities during the heat of the day** (usually 10 a.m. to 5 p.m.), and move activities to the coolest parts of the day • Stay hydrated • Stay in a cool place especially during the heat of the day and evening • If you have access to air conditioning, use it, or find a location that does. Even a few hours in a cool location can lower risk. Fans may not be adequate.
4 (Magenta)	Extreme	<ul style="list-style-type: none"> • This is a rare level of heat leading to an extreme risk for the entire population • Very dangerous to anyone without proper hydration or adequate cooling • This is a multi-day excessive heat event. A prolonged period of heat is dangerous for everyone not prepared • Poor air quality is likely • Power outages are increasingly likely as electrical demands may reach critical levels 	<ul style="list-style-type: none"> • Entire population exposed to the heat is at risk • For people without effective cooling, especially heat-sensitive groups, this level of heat can be deadly • Health systems highly likely to see increased demand with significant increases in emergency room visits • Most transportation and utilities sectors 	<ul style="list-style-type: none"> • Cancel outdoor activities** • Stay hydrated • Stay in a cool place, including overnight • If you have access to air conditioning, use it, or find a location that does. Even a few hours in a cool location can lower risk. Fans will not be adequate. • Check on your neighbors

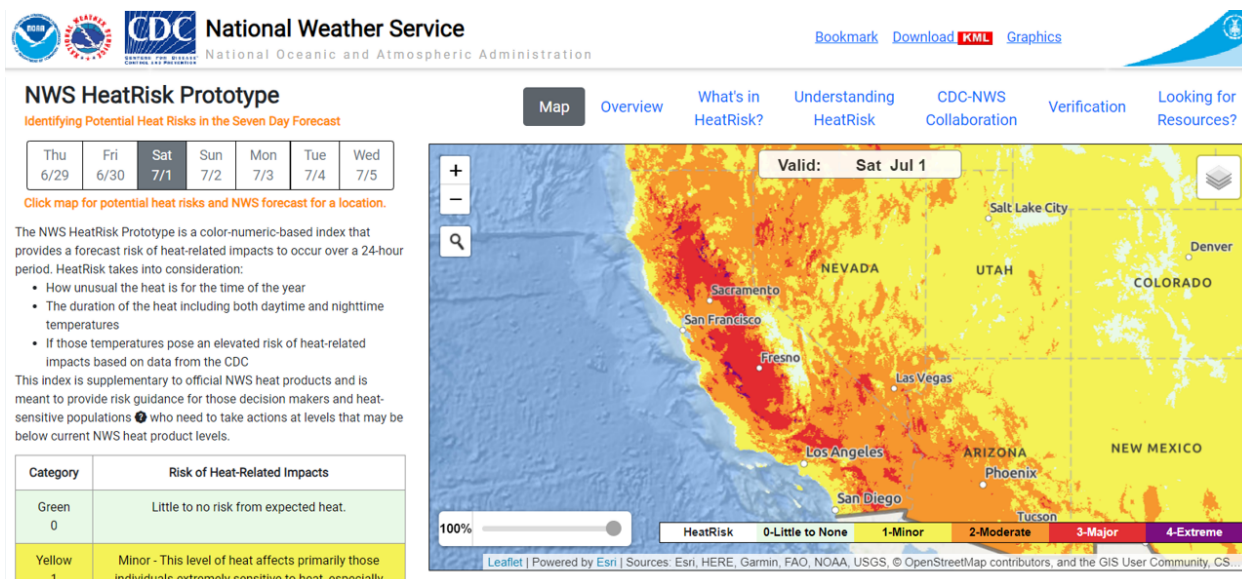
*Populations at higher risk of heat-related health impacts include older adults, young children, unhoused residents, those with chronic health conditions, outdoor workers, those exercising or doing strenuous activities outdoors during the heat of the day, pregnant individuals, those living in low-income communities, and more.

** For Extreme (Magenta/4) and Major (Red/3) risk levels, CDPH recommends more caution and therefore guides canceling outdoor activities based on these scenarios.

Click on the CDPH Heat Risk Grid (PDF) above for a high-resolution version.
The CDPH Heat Risk Grid is adapted from the NWS HeatRisk tool

Using the “HeatRisk” Forecast to Determine Heat Risk Level

To determine if an athletic event should be canceled, postponed, or moved indoors, use the [National Weather Service HeatRisk Prototype](#).



Screenshot of NWS HeatRisk forecast tool. Accessed June 29, 2023.

WHY USE HEATRISK?

- HeatRisk is a better indicator than using temperature alone
- HeatRisk takes into consideration how unusual the heat is for your location and time of the year
- HeatRisk accounts for how long the heat will last (including both daytime and nighttime temperatures) and for humidity
- HeatRisk incorporates data from the Centers for Disease Control and Prevention (CDC) to determine if temperatures pose an elevated risk of heat-related health impacts

UNDERSTANDING THE HEATRISK FORECAST

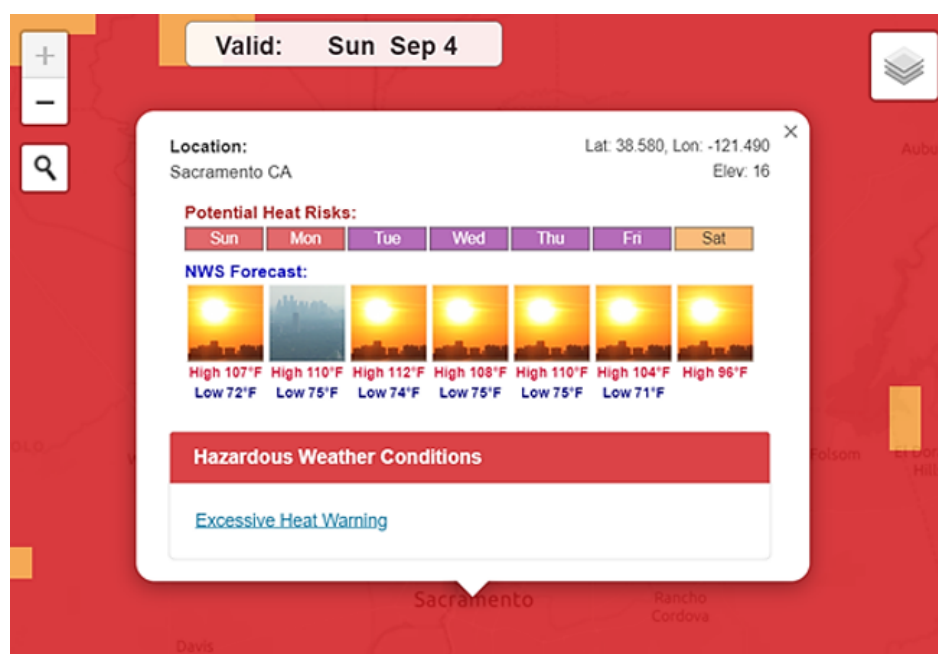
The National Weather Service (NWS) HeatRisk tool is a color-numeric-based index that provides a forecast of the potential level of risk for heat-related impacts to occur over each day (24-hour period). The HeatRisk tool incorporates heat-health data from the Centers for Disease Control and Prevention (CDC) to influence the local thresholds and inform the approach. That level of risk is illustrated by a color/number along with identifying the groups potentially most at risk at that level. Each HeatRisk level is also accompanied by recommendations for heat protection and can serve as a useful tool for planning for upcoming heat and its associated

potential risk. Based on the NWS high resolution national gridded forecast database, a daily HeatRisk value is calculated for each location from the current date through seven days in the future.

This HeatRisk tool can be used to protect lives and property from the potential risks of excessive heat, and may be especially useful for those who are more easily affected by heat or those who provide support to those communities of heat-vulnerable individuals. Weather extremes generally affect historically underserved and marginalized communities the most, and the HeatRisk forecast service ensures that communities have the right information at the right time to be better prepared for upcoming extreme heat.

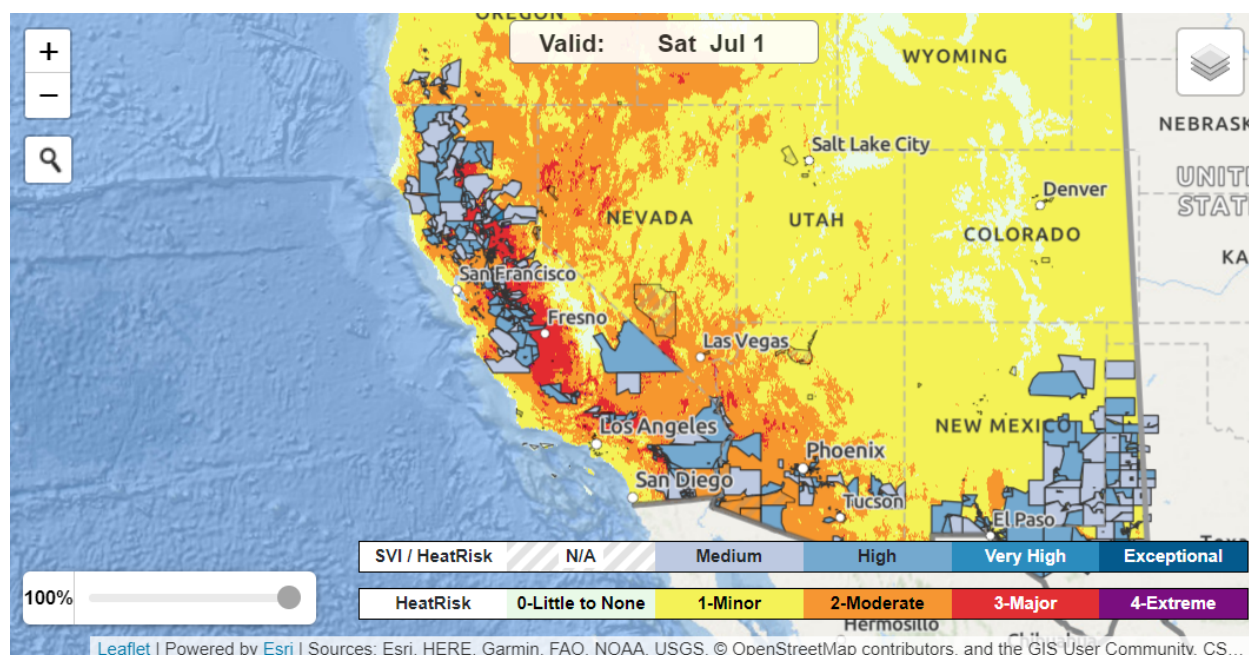
HOW TO ACCESS THE HEATRISK TOOL:

- Go to the [NWS HeatRisk tool webpage](#)
- Click the magnifier icon and type in your address or location
- Once address / location entered, the tool will display a seven-day forecast starting with the current day, including high and low temperatures, and potential heat risk (with HeatRisk levels indicated by the colors green / yellow / orange / red / magenta). Additionally, information about hazardous weather conditions will be provided (for example, excessive heat warnings). See example screenshot for Sacramento below during a September heat wave:



NWS HeatRisk forecast, Sacramento, California. Accessed September 4, 2022.

The HeatRisk tool also provides additional decision-support layers (see the "layers" icon at the upper right of the map) that allow users to view geographic boundaries (including US Counties and Tribal Lands), other NWS heat information (i.e., Heat Advisory, Excessive Heat Watch or Warning), and social vulnerability (based on the [CDC/ATSDR Social Vulnerability Index](#)) as an overlay layer.



HeatRisk map showing US County boundaries and Social Vulnerability Index overlay. Accessed June 26, 2023.

When to Cancel Sports and Other Strenuous Activities (Heat)

Review the guidance below. If a circumstance is unclear or uncertain, cancel. Note, an unconditioned space is an enclosed space within a school or other building that is not cooled by a cooling system.

When the Heat Risk level is forecast to be “Extreme” (Magenta/Level 4)
Cancel ALL outdoor and unconditioned indoor activities AND (if feasible)
Reschedule ALL outdoor activities and unconditioned indoor activities to a different day when the HeatRisk level is no longer "Extreme" (Magenta / Level 4) or "Major" (Red / Level 3) OR MOVE to alternative activities in an air-conditioned or cooled indoor environment

When the Heat Risk level is forecast to be “Major” (Red/Level 3)
Cancel ALL outdoor and unconditioned indoor activities during the heat of the day (usually 10 a.m. to 5 p.m.) AND (if feasible)

Reschedule ALL outdoor activities and unconditioned indoor activities to a cool time of the day if there is one (for example, very early morning)

OR

Reschedule ALL outdoor activities and unconditioned indoor activities to a different day when the HeatRisk level is no longer "Extreme" (Magenta / Level 4) or "Major" (Red / Level 3)

OR

MOVE to alternative activities in an air-conditioned or cooled indoor environment

Prevention of Heat Illness

Exercise produces heat within the body and can increase the player's body temperature. Add to this a hot or humid day and any barriers to heat loss such as padding and equipment, and the temperature of the individual can become dangerously high. There are several steps which can be taken to prevent heat illness from occurring:

ADEQUATE HYDRATION

- The athlete should arrive at practice well-hydrated to reduce the risk of dehydration.
- Water or sports drinks should be readily available to athletes during practice and should be served ideally chilled in containers that allow adequate volumes of fluid to be ingested.
- Water breaks should be given at least every 30-45 minutes and should be long enough to allow athletes to ingest adequate volumes of fluid.
- Athletes should be instructed to continue fluid replacement in between practice sessions.

GRADUAL ACCLIMATIZATION

- Intensity and duration of exercise should be gradually increased over a period of 7-14 days to give athletes' time to build fitness levels and become accustomed to practicing in the heat.
- Protective equipment should be introduced in phases (start with helmet, progress to helmet and shoulder pads, and finally fully uniform).

HYDRATION STATUS RECORD KEEPING

- Athletes should weigh-in before and after practice, ideally in dry undergarments to check hydration status.
- The amount of fluid lost should be replaced by the next session of activity. An athlete should drink approximately 16 oz of fluid for each kilogram of fluid lost (1 kg = 2.2 lbs).
- The color of the urine can provide a quick guess at how hydrated the athlete. If the urine is dark like apple juice means the athlete is dehydrated. If the urine is light like lemonade in color means the athlete seems adequately hydrated.

ADDITIONAL PREVENTION MEASURES

- Appropriate medical coverage during exercise.
- The use of lightweight synthetic clothing which aids heat loss.
- Athletes should wear light colored clothing.
- Well balanced diet which aids in replacing lost electrolytes.
- Avoid drinks containing stimulants such as ephedrine or high doses of caffeine.
- Alteration of practice plans in extreme environmental conditions.
- Adequate rest breaks in the shade.

- Allow athletes to remove unnecessary equipment during rest breaks.
- Adjust the amount of conditioning activities in hot weather.
- Athletes with febrile or gastrointestinal illnesses should not be allowed to participate until recovered.

Identification and Treatment of Heat Illness

Exercise produces heat within the body and can increase the player's body temperature. Add to this a hot or humid day and any barriers to heat loss such as padding and equipment, and the temperature of the individual can become dangerously high.

Heat Illness occurs when metabolically produced heat combines with that gained from the environment to exceed the heat and large sweat losses. Young athletes should be pre-screened at their pre-participation physical exam for medication/supplement use, cardiac disease, history of sickle cell trait, and previous heat injury. Athletes with any of these factors should be supervised closely during strenuous activities in a hot climate. Fatal heat stroke occurs most frequently among obese high school middle lineman.

Much of one's body heat is eliminated by sweat. Once this water leaves the body, it must be replaced. Along with water loss, many other minerals are lost in the sweat. Most of the commercial drinks now available contain these minerals, such as Gatorade, etc., but just plain water is all that is really required because the athlete will replace the lost minerals with his/her normal diet.

HEAT CRAMPS:

Acute, painful, involuntary muscle contractions that occur during or after intense exercise sessions.

Warning Symptoms:

- Muscle cramps, pain, or spasms
- Heavy sweating, thirst, fatigue

Treatment:

- Stop physical exercise and move to a cool place.
- Gently stretch the cramping muscle. Ice or gentle muscle massage may also help to stop the cramp.
- Drink water or a sports drink, with electrolytes if possible.
- Seek medical attention if the cramps last longer than one hour



HEAT EXHAUSTION:

Inability to continue exercise due to heat-induced symptoms. Occurs with an elevated body-core temperature between 97 and 104 degrees Fahrenheit. This is a more severe condition than heat cramps.

Warning Symptoms:

- Dizziness, lightheadedness, weakness
- Headache
- Fast, weak pulse
- Nausea or vomiting

- Muscle cramps
- Diarrhea, urge to defecate
- Pallor, chills
- Profuse sweating
- Cool, pale, and clammy skin
- Hyperventilation
- Fainting
- Decreased urine output



Treatment:

- Stop exercising, move to a cool place, remove excess clothing, and give fluids.
- Cool body with fans, cold water, ice towels, or ice packs. Fluid replacement should occur as soon as possible.
- Seek medical attention if recovery is not rapid. When in doubt, CALL 911. Athletes with heat exhaustion should be assessed by a physician as soon as possible in all cases.

HEAT STROKE:

Dysfunction or shutdown of body systems due to elevated body temperature which cannot be controlled. This occurs with a body-core temperature greater than 107 degrees Fahrenheit. This is the least common, but the MOST severe heat emergency.

Warning Symptoms:

- High body temperature (103 F or higher)
- Hot, red, dry, or damp skin
- Rapid heartbeat, low blood pressure
- Dizziness, staggering, disorientation
- Drowsiness, weakness, loss of consciousness
- Seizures
- Behavioral/cognitive changes (confusion, irritability, aggressiveness, hysteria, emotional instability)
- Hyperventilation
- Vomiting, nausea, or diarrhea



This is a MEDICAL EMERGENCY. Death may result if not treated properly and rapidly.

Treatment:

- Stop exercise, Call 911 immediately, remove from heat, remove clothing, immerse the athlete in cold water for aggressive, rapid cooling (if immersion is not possible, cool the athlete as described for heat exhaustion), monitor vital signs until paramedics arrive.

GENERAL TREATMENT GUIDELINES

Adequate medical personnel should be on-site to handle any heat illnesses/emergencies. Equipment for treating heat illnesses (cooling equipment such as fans, ice, tub of cold water, thermometers, etc) should be readily available for use in the event of a problem. Coaches and medical personnel should be aware of and familiar with procedures for handling any emergencies due to heat illness.

Poor Air Quality

Wildfire smoke may be intermittent and affect different areas of Placer County with elevated levels of particulate matter dependent upon wind direction. Poor air quality has the potential to cause negative health impacts, particularly for sensitive groups and when exposure is prolonged.

Smoke contains very tiny particles that can be inhaled deep into the lungs. While all people may experience varying degrees of symptoms, more sensitive individuals - such as the young, aged and those with respiratory conditions - are at greatest risk of experiencing serious symptoms. Symptoms may include, but are not limited to, coughing, watery and itchy eyes, headache, scratchy throat, and difficulty in breathing.

If you can see or smell smoke, avoid all unnecessary outdoor activities, especially if you are in an area where visibility is greatly reduced.

Here are recommended ways to reduce your smoke exposure:

- Stay indoors with the windows and doors closed; if possible, run the air conditioner on the “recirculation” setting
- Limit outdoor physical activity
- Leave the smoke-impacted areas if possible until conditions improve
- Reduce unnecessary driving. If traveling through smoke-impacted areas, be sure that your vehicle’s ventilation system is on recirculate
- Non-HEPA paper face mask filters and bandana-type face coverings may be helpful in reducing the spread of germs and viruses, but they are not capable of filtering out extra fine smoke particulates which are much smaller in size. Therefore, they will not be helpful in protecting individuals from smoke-related impacts.

Anyone experiencing serious symptoms due to smoke should contact a health professional. Persons who have a respiratory-related illness may also wish to consult their health care provider if they are experiencing smoke exposure. Air quality can change rapidly at different times during the day due to wind shifts; monitor smoke throughout the day and make outdoor plans accordingly.

Determining Air Quality Impact Levels

Information on air quality and smoke can be found on [AirNow's Fire and Smoke](#) webpage which shows data from permanent and temporary particulate monitors along with low-cost sensors; [Spare the Air](#) will show daily air quality forecasts.

The Fires and Smoke Map displays permanent and temporary monitors along with low- cost Purple Air Sensors. While the sensors do not meet the rigorous standards required for permanent monitors, these sensors can help you get a picture of air quality nearest you. The map automatically refreshes the data every 15 minutes. In addition, the Fire and Smoke Map features fire location, basic fire information (if available) and smoke plume information. Please note, air quality conditions can change quickly, with smoke moving in and out of an area, dependent upon wind direction.

Air Quality Index (AQI) Guidance/Actions

AQI Level	Value	Meaning	Actions for Schools
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.	No actions. Continue normal operations for staff and students.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.	No actions. Continue normal operations for staff and students.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	Students and staff with allergies, asthma, or other AQI sensitive health conditions will remain inside for recess, lunch, and PE. Maintenance and Operations staff will be able to work outdoors wearing an N-95 or K-95 face mask
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.	All students and staff will remain inside during the school day. Maintenance and Operations staff will be able to work outdoors wearing an N-95 or K-95 facemask. Maintenance and Operations group members, who are a medically documented member of a sensitive group or have a medically documented underlying medical condition, will be provided indoor-only tasks. The Direct supervisor will provide these members with indoor-only tasks.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects.	All students and staff will remain inside during the school day. Maintenance and Operations staff will be required to perform tasks exclusively indoors. The Direct supervisor will provide these members with indoor-only tasks.
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected.	Schools may be closed and students and staff will engage in distance learning.

Outdoor Physical Activity During Poor Air Quality

This guide is intended to support decisions on outdoor activities when poor air quality is present.
Visit [AirNow.gov](https://airnow.gov) to check the Air Quality Index levels in your area.

	Level 1 <i>Good</i>	Level 2 <i>Moderate</i>	Level 3 <i>Unhealthy for Sensitive Individuals</i>	Level 4 <i>Unhealthy</i>	Level 5 <i>Very Unhealthy</i>	Level 6 <i>Hazardous</i>
AQI Value (ozone + PM2)	0 – 50	51 – 100	101 – 150	151 – 200	201 – 300	301+
Windows and Doors	Ok to open		Keep Closed			
P.E. Classes	No Restrictions	Ensure sensitive individuals are medically managing their condition	Sensitive individuals should exercise in indoors or avoid vigorous outdoor activities	Exercise indoors and avoid vigorous activities. Sensitive individuals should remain indoors	Avoid outdoor activities and only low-level indoor exercise dependent on interior air quality.	
Athletic Practice & Outdoor Sporting Events	No Restrictions	Ensure sensitive individuals are medically managing their condition	Practice should reduce vigorous activity with increased rest and water. Sporting events should increase rest breaks and substitutions Ensure sensitive individuals are medically managing their condition.	Cancellation of outdoor practices. Indoor practice is dependent on interior air quality. Sporting events may be cancelled. If played, increase rest breaks and substitutions Sensitive individuals should remain indoors.	Sporting events must be rescheduled or relocated to areas with better air quality	

*Sensitive individuals include all those with asthma, respiratory or other heart/lung conditions.