

# EXTREME HEAT AND AIR QUALITY POLICY

As per CA State Law AB 1653 and CIF Bylaw 503.K. Heat Illness and 503.L. Air Quality Index Protocols, all CIF member schools must adhere to the CIF Heat Illness Prevention and Heat Acclimatization Policies as outlined below.

## **Extreme Heat Procedures:**

The WetBulb Globe Temperature (WBGT) is a measure of the heat stress in direct sunlight, which takes into account: temperature, humidity, wind speed, sun angle, and cloud cover (solar radiation). This differs from the Heat Index, which takes into consideration temperature and humidity and is calculated for shady areas. The WBGT is especially valuable in environments where people are physically active, such as sports, as it provides a better assessment of the risk of heat-related conditions during physical exertion. The CIF requires that schools use the WBGT for the most accurate measurement.

Depending on your Category Region (see map below), it is mandated for the benefit of the health and safety of our student-athletes that practice/games be canceled, or delayed until cooler when WBGT exceeds these levels:

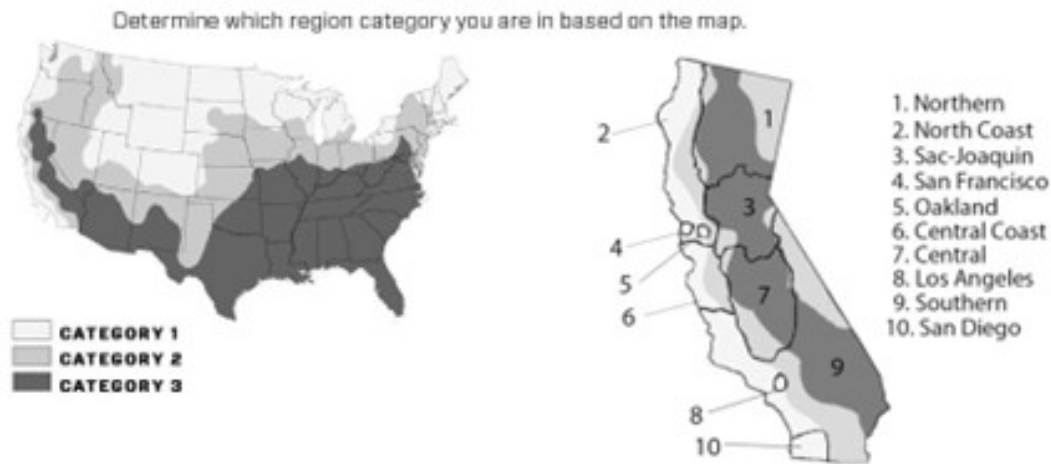
- Region Category 1 >86.2°F
- Region Category 2 >89.9°F
- Region Category 3 >92.0°F

## **STEP 1**

### **Find your Region Category**

Based on the following map, schools should select the heat category for their region to follow the required guidelines shown below. Click here to find your school's heat category: [https://www.cifstate.org/sports-medicine/WBGT\\_Category.pdf](https://www.cifstate.org/sports-medicine/WBGT_Category.pdf)

The majority of states fall under just one category or two at the most. However, due to its diverse climate across the state, California encompasses all three categories: light gray - Category 1 / medium gray - Category 2 / dark gray - Category 3. (See image below).



**STEP 2**

**WBG T Readings** (Note: Temperatures listed in the chart below are calculated using a WBG T and are not basic air temperatures) Please see Step 3 below for samples of WBG T readings.

Cat 3	Cat 2	Cat 1	Outdoor Activity Guidelines
<82.0°F	<79.7°F	<76.1°F	Normal Activities – Provide at least three separate rest breaks each hour with a minimum duration of 3 min each during the workout.
<27.8°C	<26.5°C	<24.5°C	
82.2 - 86.9°F	79.9 - 84.6°F	76.3 - 81.0°F	Use discretion for intense or prolonged exercise; Provide at least three separate rest breaks each hour with a minimum duration of 4 min each.
27.9 - 30.5°C	26.6 - 29.2°C	24.6 - 27.2°C	
87.1 - 90.0°F	84.7 - 87.6°F	81.1 - 84.0°F	Maximum outdoor practice time is 2 h. Provide at least four separate rest breaks each hour with a minimum duration of 4 min each. <u>For Football/Field Hockey:</u> players are restricted to helmet, shoulder pads, and shorts during practice. If the WBG T rises to this level during practice, players may continue to work out wearing full pads without changing to shorts.
30.6 - 32.2°C	29.3 - 30.9°C	27.3 - 28.9°C	
90.1 - 91.9°F	87.8 - 89.6°F	84.2 - 86.0°F	Contests are permitted with additional hydration breaks. Maximum outdoor practice time is 1 h. No protective equipment may be worn during practice, and there may be no conditioning activities. There must be 20 min of rest breaks distributed throughout the hour of practice.
32.2 - 33.3°C	31.0 - 32.0°C	29.0 - 30.0°C	
≥92.1°F	≥89.8°F	≥86.2°F	No outdoor workouts/contests. Delay practice/competitions until a cooler WBG T is reached.
≥33.4°C	≥32.1°C	≥30.1°C	

**STEP 3**

**Schools without a WBG T should use the link below from the NOAA for a WBG T reading**

<https://digital.mdl.nws.noaa.gov/?zoom=7&lat=35.28787&lon=-79.36779&layers=F000BTFTFTT&region=0&element=8&mxmz=true&barbs=false&subl=TTFTFTT&units=english&wunits=nautical&coords=latlon&tunits=localt>

**EXAMPLE @2:30 PM**

AUGUST 31, 2023

AUGUST 31, 2023

AUGUST 31, 2023

CATEGORY 1 SCHOOL

CATEGORY 2 SCHOOL

CATEGORY 3 SCHOOL

Outside Air Temp 87° F

Outside Air Temp 97° F

Outside Air Temp 92° F

WBG T Reading =80

WBG T Reading =82

WBG T Reading =81

### **CIF Fall Outdoor Sports Acclimatization Policy**

Given the extreme heat issues typically experienced at the start of the Fall sports season, heat acclimatization is crucial for high school athletes to help them adapt to hot weather conditions and reduce the risk of heat-related illnesses. The following is a four-step plan for heat acclimatization in outdoor high school sports:

1. **Gradual Increase in Activity:**
  - Start with light workouts in cooler conditions to prepare athletes for increased heat exposure.
  - Gradually increase the intensity and duration of practice sessions over 10-14 days.
2. **Hydration Education:**
  - Teach athletes the importance of staying hydrated and recognizing signs of dehydration.
  - Encourage regular water breaks during practice and games and always provide access to water.
3. **Modify Practice Schedules:**
  - Schedule outdoor practices during cooler times, like early morning or late evening.
  - Allow frequent breaks and shade to help athletes cool down and recover.
4. **Monitor Athlete Health:**
  - Educate coaches, trainers, and athletes on the signs of heat-related illnesses (heat exhaustion and heat stroke).
  - The school will have available a method to institute whole-body cooling to treat a student-athlete with exertional heat illness, especially heat stroke (e.g., ice tub, "taco tarp", ice towels) which is easily accessible at all practice and contest venues.

Safety should always be the top priority when acclimating high school athletes to hot weather conditions. This plan helps athletes adapt while minimizing the risk of heat-related issues.

#### **For All Outdoor Fall Sports**

**Five-Day Acclimatization Period.** Preseason practice shall begin with a five-day acclimatization period for all Fall student-athletes. All student-athletes, including those who arrive at preseason practice after the first day of practice, are required to undergo a five-day acclimatization period. The five-day acclimatization period shall be conducted as follows:

- (a) Participants shall not engage in more than one on-field practice per day during the five-day acclimatization period. On-field practices shall last no longer than two hours.

#### **For Football Only**

- (b) During the first three days of practice or testing activity, helmets shall be the only protective equipment student-athletes may wear. During the next two days of practice or testing activity, helmets, and shoulder pads shall be the only protective equipment student-athletes may wear. Student-athletes may practice in full pads on the sixth day of practice or testing activity.

	US AQI Level	PM2.5 ( $\mu\text{g}/\text{m}^3$ )	Health Recommendation (for 24 hour exposure)
	Good 0-50	0-12.0	Air quality is satisfactory and poses little or no risk.
	Moderate 51-100	12.1-35.4	Sensitive individuals should avoid outdoor activity as they may experience respiratory symptoms.
	Unhealthy for Sensitive Groups 101-150	35.5-55.4	General public and sensitive individuals in particular are at risk to experience irritation and respiratory problems.
	Unhealthy 151-200	55.5-150.4	Increased likelihood of adverse effects and aggravation to the heart and lungs among general public.
	Very Unhealthy 201-300	150.5-250.4	General public will be noticeably affected. Sensitive groups should restrict outdoor activities.
	Hazardous 301+	250.5+	General public at high risk of experiencing strong irritations and adverse health effects. Should avoid outdoor activities.

*Pictured: Air quality index chart with corresponding PM2.5  $\mu\text{g}/\text{m}^3$ .*

#### ***Air Quality and Sport Participation: CIF Position Statement Sports Medicine Advisory Committee***

Recent catastrophic and historical fires in California continue to raise numerous questions regarding safe participation in sport and practice for young athletes. This position statement serves as a resource to coaches, administrators, parents and students who have questions about participation in outdoor activity during periods of diminished air quality for California high school sport.

Healthy athletes are at increased risk for inhaling pollutants in the air. Physical activity increases ventilation and the number of pollutants that are inhaled are increased compared to periods of rest. During physical activity, air is often inhaled directly into the mouth, bypassing the built-in nasal filtration system. Deep inhalation diffuses pollutants into the bloodstream more quickly during exercise. These risks are increased if an athlete has a pre-existing medical condition such as asthma or a cardiac condition.

A valid and reliable standardized national air quality resource is the National Weather Service (NWS) Air Quality Forecast System. This system provides constant monitoring of ozone, particulate matter and pollutants with accurate and advanced notice to prevent the adverse effects of decreased air quality.

The key component of the standardized air quality resource is the NWS Air Quality Index (AQI). The AQI provides real time monitoring and alerts in response to changing air quality levels. Five different pollutants are tracked in this system including the following: 1) ground level ozone 2) particle pollution 3) carbon monoxide 4) sulfur dioxide 5) nitrogen dioxide. Ground level ozone and particulate matter are the most concerning pollutants for outdoor physical activity. The AQI is reported as a single number based on a scale of 0 to 500 with 0 being completely safe and 500 indicating the most hazardous levels of air pollution.

Consistent with this national reporting system and consistent with the National Collegiate Athletic Association Committee on Competitive Safeguards and Medical Aspect of Sport, the CIF Sports Medicine Advisory Committee offers the following general guidance to institutions seeking to make decisions about the appropriateness of practice or competition in questionable air quality situations. With recent severe fires within the state of California, both regional and statewide authorities have often established alerts to canceling sport events or practices because of local risk. CIF recommends following these guidelines. If specific guidelines have not yet been provided, the following are useful guidelines consistent with NCAA and NFHS position statements on air quality.

- 1) Monitoring of local AQI and associated air quality alerts, especially during times of extreme environmental conditions is recommended. Advice and monitoring is best done by the primary athletics health care providers (athletic trainers, school nursing staff, team physicians) who have training in such monitoring. Schools may choose to delegate this responsibility to a staff member with knowledge of AQI.
- 2) Member schools should consider shortening or cancelling outdoor athletic events (practices or competition) in accordance with AQI recommendations. Exposure to air should be managed more carefully for students with pre-existing lung or heart conditions. When the AQI rises above 100 schools should consider removing such athletes at risk from practice or competition.
- 3) At AQI values above 150 serious consideration should be given to rescheduling the activity or moving it indoors if possible. Prolonged exposure and heavy exertion should be avoided.
- 4) School Emergency Action Plans may guide the emergency care response in these circumstances and the staff should be made aware of this plan.
- 5) The Preparticipation Physical Examination for Sport will be used as a tool to identify students at risk for smoke inhalation exposure such as asthma, cardiac disease and respiratory disease.
- 6) Emphasize to student athletes that the wearing of masks, such as for protection against COVID-19 does not protect against exposure to hazardous air quality. Consequently, wearing masks will not allow competition or practices when AQI is at hazardous levels.

There are now validated online applications to smart phones which can track not only AQI in a town or city, but also AQI regionally near each neighborhood within each town or city. Consistent with NFHS, California Air Quality Board and California Environmental Protection Agency, the CIF recommends using the [www.airnow.gov](http://www.airnow.gov) application for this purpose. The AQI may even be checked periodically during a day of competition or practice in case of changing conditions. The application was created with the collaboration of the Environmental Protection Agency and contains not only air quality data but also current fire conditions, webcams and email notifications consistent with local and regional up to date conditions.

#### **References**

- 1) Air Quality Position Statement. NCAA Sports Science Institute, Sept 2018
- 2) NFHS Position Statement on Physical Activity, Air Quality and Wildfires, April 2019
- 3) CIF North Coast Section. Air Quality Index Rules, Bylaw 1003H.
- 4) US Environmental Protection Agency. Air Now website [www.airnow.gov](http://www.airnow.gov)