

**AIR AWARE**

**Air Quality Guidelines and Regulatory Suggestions for Outdoor Sports**

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# RASAC - Air Quality Guidelines and Regulatory Suggestions for Outdoor Sports

## **AIR AWARE**

### **BACKGROUND**

In May 2016 the people of Alberta experienced a severe forest fire season beginning with the Fort McMurray fire. The air quality from this and other forest fires rose to unprecedented Air Quality Health Index (AQHI) numbers throughout the province that warned of dangerous air conditions, even if the danger of the actual fires was hundreds of kilometers away. There was confusion in those gathered for outdoor sporting events, especially for children and young athletes, of when to abandon play. At the time there were no policies in place for any sport or school board – in other words, regulatory failure.

This failure, coupled with the personal experiences of RASAC's members with the health damage that can occur with such events, suggested to RASAC that we should use our expertise and networks to eliminate this risk for people, especially our young athletes. Thus RASAC brought together scientists and policy experts from Alberta Environment, Alberta Health, and Health Canada to establish Air Aware – a policy guideline for outdoor sports experiencing poor air quality.

### **AUDIENCE AND PURPOSE**

This document serves as both policy and guidelines for coaches, players, and referees in outdoor sports. As policy, it conveys what must be done by coaches and referees. As a guideline, it suggests what team and match officials should consider in assessing air quality at local fields and awareness of potential health impacts.

### **BASIS**

The best scientific information available at the time of publication supports the policy and guidelines. This document will be updated as new knowledge becomes available. So coaches and referees can make informed decisions, this document includes background information about the Air Quality Health Index (AQHI), asthma management, and exercise-induced bronchoconstriction (EIB).

### **POLICY**

1. For mobile devices download the AQHI Canada app for IOS or Android at <http://open.alberta.ca/interact/aqhi-canada>
2. Otherwise go to <http://airquality.alberta.ca> and click on “Air Quality Health Index”
3. Click on the AQHI station name
  - a. This brings up a pop-up box with the AQHI for that station. See the example on next page.
4. Note the station, time, and date, and Index calculation.
  - a. Updates usually occur hourly (no later than 20 minutes past the hour).

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- b. Use the index calculation that is within one hour of scheduled kick-off or practice time.
  - i. **If the AQHI is “7” to “9” then go to steps 5 or 6 as appropriate.**
  - ii. **If AQHI is “10” or higher (10+) then the game or practice is cancelled. Do not go to the field.**
  
5. **For Games:** For referees, coaches and teams: go to the field. If the AQHI is still “7” or higher at the next calculation, then abandon game. Referee to write on game sheet reason for abandonment with the Index calculation, time & date number calculated, and AQHI station used.
  - a. If air quality changes dramatically during a game (e.g. sudden smoke event caused by wind direction change) referees are advised to use their discretion. Record all decisions and relevant information on the game sheet.
  
6. **For Practices:** Postpone or reschedule practice.

**GUIDELINES AND INFORMATION FOR COACHES**

- 1) Incorporating AQHI into your training practices
  - a) Access the latest AQHI calculations at <http://airquality.alberta.ca> or by using the AQHI Canada app
    - i) If the AQHI has a value of “3” or below continue with training as normal.
    - ii) If the AQHI has a value of 4 – 6 then keep watch of symptoms (coughing, scratchy/sore throat, burning/watery eyes, tightness in the chest, shortness of breath, difficulty breathing) and be prepared to adjust the practice by:
      - Reducing the intensity.
      - Reducing the duration of the practice.
      - Providing resting periods.
    - iii) If the AQHI is “7” or above consider rescheduling.
- 2) The following weather and other conditions can affect local air quality:
  - a) Shifts in wind strength and direction can quickly bring smoke from forest fires.
  - b) Local burning on stubble or agricultural fields.
  - c) Pollution from nearby traffic, especially major roads or highways.
  - d) Near or downwind of any industrial areas or other significant emission sources.
  - e) Very light winds and stable air mass in urban locations that cause pollution build-up.
  - f) Smog formation on hot, sunny days.
- 3) Alberta Health Services maintains an Air Quality Advisory website. This site and AQHI air quality forecasts are helpful for planning your outdoor event.
 

<http://www.albertahealthservices.ca/news/air.aspx>

**EXAMPLE** <http://airquality.alberta.ca>

**FIRST**  
Click on station location here

**SECOND**  
Pop-up box displays

**THIRD**  
Note station location here

**FOURTH**  
Note time & date here

**FIFTH**  
Note Index calculation here

Community	AQHI	Maximum AQHI Forecast		
		Today	Tonight	Tomorrow
Anzac	9	10+		
Beaverlodge	2	2		
Brooks	1	1		
Bruderheim	1	3		
Calgary	2	3		
Caroline	2	2		
Cold Lake	1	2		
Conklin	1	1		
Conklin Lookout	1	1		
Edmonton	2	3		
Edson	2	2		
Elk Island	1	3		
Elk Point	N/A	2		
Fort Chipewyan	1	10+		
Fort McKay	10+	10+		
Fort McKay South	10	10+		
Fort McMurray	10	10+	10+	10+
Fort Saskatchewan	N/A	3	3	3
Grande Prairie	1	2	2	2

## GENERAL BACKGROUND INFORMATION

1. The AQHI is a web-based, risk management tool which describes a local reading of air quality as it relates to human health. While the Index number for a location can rise into the triple digits (Fort McMurray in 2016 peaked at over “100”) anything over “7” is considered high risk to human health.
2. The AQHI treats anything above 10 as “Very High Risk” with health messages for the “general” and “at risk” populations to reschedule all outdoor activities – strenuous or not.
3. Health Canada recommends through the AQHI that for strenuous activities like soccer, one should reduce intensity or reschedule outdoor activity when the AQHI exceeds 7. Given this recommendation and peer-reviewed science noted below, the precautionary principle suggests that matches or practices should be abandoned when there is an AQHI value of “7” or over.
  - Elite athletes are in the “at-risk population because of the intensity and duration of exposure to outdoor air quality.”
  - Regarding air quality, soccer is considered a high exposure sport.
  - Asthma is now twice as prevalent in elite athletes (11-50%) as the general population (4-20%).
  - It is neither possible nor desirable to acclimatize athletes to air pollution. The US Olympic Committee recommends that when competing in high pollution areas the best strategy for training is alternative sites. “Stay away from air pollution.”
4. Differences in AQHI across Canada. This information is important for policy development outside of Alberta.
  - The AQHI is calculated differently for Alberta in two significant ways. First, in the majority of Canada, the AQHI only measures ground-level ozone, fine particulate matter (PM<sub>2.5</sub>) and nitrogen dioxide. In addition to these three pollutants, Alberta is more comprehensive by also including sulphur dioxide, hydrogen sulphide, total reduced sulphur and carbon monoxide in its AQHI reporting. Second, for the majority of Canada the AQHI is calculated based on 3-hour rolling averages of pollutant concentrations, whereas Alberta uses 1-hour averages which can override the AQHI value if thresholds are met. Alberta’s modifications to the index allow AQHI reporting to be more responsive to dramatic changes in air quality.
  - Some provinces and territories have adopted or are looking to adopt similar upgrades to AQHI calculation and reporting.
5. Importance of relying on the AQHI Index. Individuals tend to rely on sensory perception to evaluate air quality when, in fact, the pollutants that present the greatest harm to human health are difficult to see or smell (e.g. fine particulate matter and ground-level ozone).

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6. Exercise-Induced Bronchospasm (EIB) is a sudden narrowing of the airways in response to vigorous exercise. It may occur in some individuals who have no pre-existing diagnosis of asthma. Most obvious symptoms of EIB include wheezing, prolonged shortness of breath, tightness in chest, coughing, extreme fatigue, and chest pain.
7. Asthma sufferers should have symptoms under control before exercise (no coughing, shortness of breath, wheezing, etc.) and no other respiratory concerns (common cold, etc.). According to studies, asthma is now twice as prevalent in elite athletes as the general population. Symptoms of severe asthma emergency include: struggling to breathe, rescue inhaler does not help, cannot speak/finish sentences, nostrils flaring out, fainting, severe fatigue, blue lips and nails, and unconsciousness.

## References

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