AIR QUALITY POLICY FOR THE CONDUCT OF EVENTS

July 2020

PURPOSE

This policy has been developed to assist Race Directors and Technical Officials make appropriate decisions when the Field of Play is impacted by low visibility or airborne particulates.

LOW VISIBILITY

Low visibility is generally caused by fog/mist or darkness.

The swim/paddle leg of an event is not to commence unless:

i. The first turning mark is clearly visible from the start line, and
ii. Each subsequent turning mark is clearly visible to competitors, and
iii. Every position on the course has a clear view of a safe exit location on the shore

The bike leg of an event is not to commence unless there is at least 100m visibility at all positions on the course.

SMOKE POLLUTION AND EXERCISE

Bushfire smoke can pose a health risk to recreational and high performance athletes. The health impact of bushfire smoke can vary based on an individual's current health status and previous medical conditions. Current public health advice is aimed at high-risk groups, including people over 65, children 14 years and younger, pregnant women and those with existing heart or lung conditions. However, athletes involved in high performance sport can also be at increased risk while performing high intensity prolonged exercise outdoors.

When pollution exposure is at low levels, the respiratory tract's usual defence mechanisms trap, transport and clear pollutants effectively. With elevated exposure, short-term accumulation can occur resulting in inflammation and this can exacerbate a number of health conditions with asthma being the most common in athletes.

During exercise, respiratory rate and volume increases. This in turn increases the total airway exposure to pollutants. In high performance athletes, moderate exercise can increase the total amount of air passing through the airway by more than 10 times and vigorous exercise by more the 20 times, compared to resting values. Even at moderately reduced air quality, this can represent a significant increase in pollutant exposure during a one-hour, high intensity training session.

AIRBORNE PARTICULATES

Air quality can have a significant health impact. In Australia this can be caused by bushfire smoke or dust storms. Particulate levels are the principal concern in bushfire smoke. The size of the particles in the air we breathe affects their potential to cause health problems. Fine particles, with diameters less than 2.5 microns are contained in bushfire smoke and are often linked to health effects. Particles in this size range are slow to clear from lungs when they are inhaled.

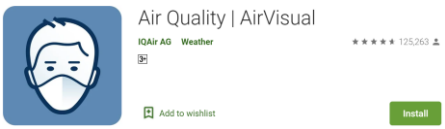
Health Effects of Bushfire Smoke

The health effects of smoke range from eye, nose or throat irritation to serious problems such as reduced lung function, bronchitis, exacerbation of asthma and even a risk of death.

Athletes are at risk when they are breathing deeply and rapidly

Risk Assessment of Smoke Conditions

Many areas of Australia have continuous monitoring of air quality, which allows for informed decisions to be made by Race Directors and Technical Officials. One of several apps available for this purpose is the AirVisual app.



Air quality is expressed in terms of the Air Quality Index (AQI). The AQI identifies the worst airborne particulate at the current time and expresses it in terms of airborne concentration. The higher the AQI, the lower the air quality. Ranges are expressed in the following categories which are consistent with the USA EPA National Ambient Air Quality Standard:

AQI	Approximate Visibility	Category
0-50	Above 15 kms	Good
51-100	8-15 kms	Moderate
101-150	2 - 8 kms	Unhealthy for sensitive groups (Note 1)
151 - 200	1.5 - 2 kms	Unhealthy
201 - 300	1.0 - 1.5km	Very unhealthy
Above 300	Less than 1 km	Hazardous

Note (1): Sensitive groups include children, elderly and pregnant people and sufferers of cardiac or respiratory diseases.

Most State and Territory government websites present air quality information as the 'Air Quality Index' or AQI calculated from a 24-hour average. The AQI is calculated for a number of pollutants and it was designed as a way to standardise information across these different types of air pollution. This means that the AQI number is not a raw measurement, but a scale based on how much the reading is above (or below) the air quality standard. Some States and Territories provide the AQI separately for different pollutants, others provide only a composite AQI that is based on the pollutant that is the worst. For more details on how the AQI is calculated in your area, please see your local air quality agency's website.

PM2.5 are very small particles usually found in smoke. PM2.5 particles are a common air pollutant. Breathing in PM2.5 particles can have negative effects on your health. PM2.5 particles are small enough for you to breathe in deeply into your lungs. Sometimes particles can enter your bloodstream.

PM2.5 is measured at all air quality measuring sites in Australia. The other pollutants that make up the AQI are not measured everywhere in Australia. This means that PM2.5 has the relevance for providing standardised guidelines for all of Australia. PM2.5 is also by far the most important air pollutant in smoky conditions.

Smoke concentrations in the atmosphere can vary markedly within a short distance (e.g. 2 km) and can change rapidly over time. 24 hour rolling average of PM2.5 is useful for knowing the average PM2.5 levels in the air over the past 24 hours, at a point in time. The 24 hour rolling average does not however necessarily give an accurate understanding of real-time PM2.5 concentration. For individuals wishing to make decisions about whether it is safe to exercise now, or over the next couple of hours, having real-time or hourly averages of PM2.5 is important.

How do I find out the PM2.5 levels at my location?

There are three ways to get information on PM2.5 concentration levels (measured in µg/m³):

1. State and Territory air quality monitoring websites (hourly measures of PM2.5 concentration)
2. The AirRater App (or other similar App providing real time PM2.5 in µg/m³)
3. A handheld portable device that measures PM2.5 in real time

State and Territory air quality monitoring websites:

- ACT
- VIC
- NSW
- QLD
- WA
- SA
- TAS

Unfortunately, different States and Territories have slightly different systems for measuring air pollution, different means of presenting information and varying categories and systems for different levels of pollution (good, fair, moderate etc.)

Exercise-specific categories for smoke affected environments

The table below has drawn on information from several of the Australian State and Territory websites and modified information specifically for application to decisions around physical exercise in smoke affected environments. There are many factors that contribute to readings found on STTA websites, air-quality apps and handheld devices. The numbers on the table below are a guide and should not be taken as absolutes. There is a need to use common sense in assessing the environment and utilising other factors such as visibility in making a decision about whether or not exercise is appropriate.

Guidelines for exercise in smoke affected environments

Exercise Category	General Recommendations	Exercise-specific Recommendations	PM2.5 µg/m³
Good to exercise	It is a good day to be outside	All forms of exercise are encouraged.	**<25**
Moderate Caution for those who are sensitive to air pollution	The air is probably smoky. Sensitive groups may experience symptoms like coughing or shortness of breath. If you are sensitive to air pollution, spend less time outside in the smoke or dust and follow your treatment plan. If you are worried about your symptoms, seek medical advice.	If you are sensitive to air pollution, you may need to reduce prolonged high intensity endurance exercise (e.g. rowing, cycling, long-distance running). Most individuals will tolerate exercise as normal, without symptoms.	**25-50**
Poor conditions for exercise	The air is probably very smoky. Sensitive groups and/or others may experience symptoms like coughing or shortness of breath. If you are sensitive to air pollution, spend less time outside in the smoke or dust and follow your treatment plan. If you are worried about your symptoms, seek medical advice. Seek urgent medical help if anyone has trouble breathing or tightness in the chest. Call 000 for an ambulance.	Consider reducing prolonged high intensity endurance activities (e.g. rowing, cycling, long-distance running). If you are sensitive to air pollution, avoid prolonged high intensity endurance exercise (e.g. rowing, cycling, long-distance running) or move it indoors. Intermittent exercise (e.g. tennis, netball, beach volleyball, cricket) and power activities (e.g. sprint training, javelin training, jump training, rugby skills training) may still be well-tolerated but athletes should be alert to symptoms. Increase rest-to-activity ratio for intermittent exercise.	**51-100**
Very poor conditions for exercise	The air is probably very smoky. Sensitive groups and/or others may experience	High intensity endurance activities (e.g. rowing, cycling, long-distance running) should be avoided or moved indoors.	**101-150**

	symptoms like coughing or shortness of breath. If you are sensitive to air pollution, spend less time outside in the smoke or dust and follow your treatment plan. If you are worried about your symptoms, seek medical advice. Seek urgent medical help if anyone has trouble breathing or tightness in the chest. Call 000 for an ambulance.	Intermittent exercise (e.g. tennis, netball, beach volleyball, cricket) and power activities (e.g. sprint training, javelin training, jump training, rugby skills training) may still be well-tolerated but athletes should be alert to symptoms. Increase rest-to-activity ratio for intermittent exercise. Any individual may be affected by exercising in smoky air at these levels. If symptoms develop, cease exercise and move indoors.	
Likely to be hazardous to exercise outdoors	The air is probably extremely smoky. Everyone will be at risk of experiencing symptoms like coughing or shortness of breath. Listen to your local emergency radio station or visit your State Emergency Agency for advice. Stay indoors away from smoke and dust. If you are sensitive to air pollution, follow your treatment plan. Close your windows and doors to keep smoke and dust out of your home. If you think the air in your home is uncomfortable, consider going to an air-conditioned building like a library or shopping centre for a break if it's safe to do so. If you are worried about your symptoms, seek medical advice.	Most individuals should avoid physical activity outdoors. Where there is an intention to play organised high level sport and there are medical staff on site to advise, these levels of pollution should trigger a discussion between medical staff and officials about the advisability or otherwise of proceeding with the event.	**>150**

	Seek urgent medical help if anyone has trouble breathing or tightness in the chest. Call 000 for an ambulance.		

Recommended control measures for poor air quality:

AQI	Message	ACTIONS for Events
Good - Moderate (0 – 100)	Acceptable air quality for outdoor activities	No specific control measures required
Unhealthy for Sensitive Groups (101 – 150)	Be aware of health effects of smoke and related symptoms	Provide advice to sensitive groups Consider shortening junior events
Unhealthy (151 – 200)	Everyone should avoid sustained outdoor exercise	Provide advice to sensitive groups Junior events should be shortened as a minimum control measure Strongly consider cancelling all junior events Consider shortening or cancelling senior events
Very Unhealthy (201 – 300)	General public will be noticeably affected. Sensitive groups will experience reduced endurance. Stay indoors if possible	Cancel all junior events Senior events should be shortened as a minimum control measure Strongly consider cancelling all senior events
HAZARDOUS (above 300)	Avoid exercise and remain indoors	Cancel all events and training

Recommended Messages and Actions for Poor Air Quality

Additional Information

- Air quality information on State and Territory government websites is generally updated hourly; therefore, there can be a lag between official measurements and what is occurring in real time. This can cause limitations when it comes to determining the air quality in your local environment. If smoke is affecting usual visibility within your area, it is likely that the air quality will fall into a higher risk category.
- Consecutive days of exposure to polluted air can have a cumulative effect, lowering an athlete's threshold for symptoms. This should be considered if your region has been exposed to increased smoke for several days in succession.
- Increases in exercise intensity and duration result in increased airway exposure to polluted air. AIS recommends modifying training, or training locations based on the table above.
- All athletes who suffer from asthma should have an updated asthma management plan and consult their doctor prior to exercising in smoke-affected environments.

- Recent respiratory infection increases the risk for development of smoke-related symptoms, even in non-asthmatics.

Suggested process

Decisions to shorten, reschedule or cancel a race should be made in consultation with the Technical Delegate or the Appointed Contingency Committee. The final decision to modify the race plan will rest with the Race Director. Should the event be an EONS (Event Of National Significance), Triathlon Australia (National Events & Technical Manager or CEO) must be involved in the decision process.

The RD (LOC) keeps monitoring the air quality using either AQI or PM2.5, together with the BOM wind direction. Based on the information the team can implement one of the below 4 options:

- Plan A – continue as planned, no changes
- Plan B – shorten the course to have all athletes finished by a certain time based on the forecast
- Plan C – shorten the course to a certain distance as the minimum
- Plan D – cancel

Timeline for decision making

It is an event specific decision and cannot be generalised. The RD (LOC) and TD should take several factors into consideration:

- Level of the event
- Length of the event
- Age of participants involved
- Number of participants involved
- Percentage of interstate of international participants
- Options to relocate without major impact on participants
- Agreements with suppliers, contractors and any other stakeholders
- and other similar factors

Based on the factors and local conditions, the RD (LOC) can decide to cancel the event early. This could due to trying to minimise a financial impact on participants (options to cancel bookings), but also overall financial impact on the event organiser. The event organiser should have a plan in place to inform participants about the any changes as soon as practical (this also includes any information on paid entry fees). Ideal channels of communication are direct emails, phone calls, race website information and social media. For EON (Event Of National Significance), communication plan should be confirmed with Triathlon Australia in order to send a clear message to all stakeholders.