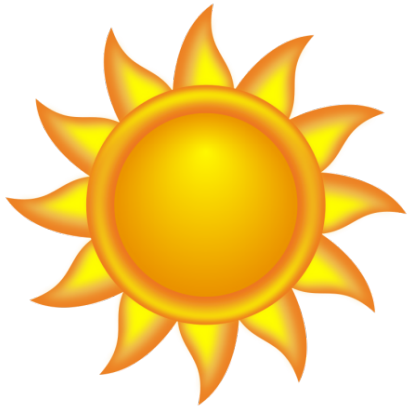
Extreme Weather at Competitions



Extreme Weather at Competitions

Hot Weather Policy

Effective 7 September 2012

ENDORSED BY THE EA NATIONAL BOARD: 6 September 2012

1. Horses

Horses exercising and competing in hot environmental conditions can be affected by heat stress.

When environmental heat conditions are adverse, exercising horses require appropriate cooling measures to safeguard their welfare. The primary responsibility for the welfare of horses competing and exercising during hot weather lies with the rider of the horse. Riders must always take action to prevent, manage and treat heat stress in their horses. Event organisers are responsible for providing adequate facilities and information that riders need to safeguard the welfare of horses. Access to ice and cooling water during competition is a compulsory requirement that arises under certain environmental conditions.

To assess the risk of heat stress in horses, the FEI uses the Wet Bulb Globe Temperature (WBGT) Index. WGBT information is published on the Bureau of Meteorology (BOM) website under their Thermal Comfort Observations webpages - http://www.bom.gov.au/info/thermal_stress/. WBGT information is published on the BOM website for each Australian State and Territory with regional indices.

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Wet Bulb Globe Temperature (WBGT) from Temperature and Relative Humidity

Relative Humidity (%) \ Temperature (°C)	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
0	15	16	16	17	18	18	19	19	20	20	21	22	22	23	23	24	24	25	25	26	27	27	28	28	29	29	30	31	31	32	32
5	16	16	17	18	18	19	19	20	21	21	22	22	23	24	24	25	26	26	27	27	28	29	29	30	31	31	32	33	33	34	35
10	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	30	30	31	32	32	33	34	35	36	36	37
15	17	17	18	19	19	20	21	21	22	23	23	24	25	26	26	27	28	29	29	30	31	32	33	33	34	35	36	37	38	39	
20	17	18	18	19	20	21	21	22	23	24	24	25	26	27	27	28	29	30	31	32	32	33	34	35	36	37	38	39			
25	18	18	19	20	20	21	22	23	24	24	25	26	27	28	28	29	30	31	32	33	34	35	36	37	38	39					
30	18	19	20	20	21	22	23	23	24	25	26	27	28	29	29	30	31	32	33	34	35	36	37	39							
35	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39								
40	19	20	21	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39									
45	19	20	21	22	23	24	25	26	27	27	28	29	30	32	33	34	35	36	37	38											
50	20	21	22	23	23	24	25	26	27	28	29	30	31	33	34	35	36	37	39												
55	20	21	22	23	24	25	26	27	28	29	30	31	32	34	35	36	37	38													
60	21	22	23	24	25	26	27	28	29	30	31	32	33	35	36	37	38														
65	21	22	23	24	25	26	27	28	29	31	32	33	34	36	37	38															
70	22	23	24	25	26	27	28	29	30	31	33	34	35	36	38	39															
75	22	23	24	25	26	27	29	30	31	32	33	35	36	37	39																
80	23	24	25	26	27	28	29	30	32	33	34	36	37	38																	
85	23	24	25	26	28	29	30	31	32	34	35	37	38	39																	
90	24	25	26	27	28	29	31	32	33	35	36	37	39																		
95	24	25	26	27	29	30	31	33	34	35	37	38																			
100	24	26	27	28	29	31	32	33	35	36	38	39																			

WBGT > 40

Note: This table is compiled from an approximate formula which only depends on temperature and humidity. The formula is valid for full sunshine and a light wind

WBGT	Example °C:%RH	Recommendations for Competitions	Cooling Facilities/Methods
<28	30:45	No changes needed to the competition format or timing.	1. Access to least 2 wash bays with freely running water via hoses. 2. Shaded areas/shelters. Note – each horse may need to be hosed with 2 hoses for 20-40 minutes if heat stressed.
28 - 30	29:60	Some precautions to reduce heat load on horses will be necessary. • Use shaded areas for competition and warm up areas • Avoid non grassed riding surfaces where possible • Reduction in overall effort (shorter distance, less jumping efforts, etc) • **Competition PA announcements – frequently repeated. (See below)**	1. Access to least 2 wash bays with freely running water via hoses. 2. Shaded areas/shelters. Note – each horse may need to be hosed with 2 hoses for 20-40 minutes if heat stressed.
30 - 33	30:65	Additional precautions to those above to limit overheating of horses will be necessary. • The timing of events/competition should be considered. Competitions **should** be held in cooler parts of the day; between 7.00am -11.00am and/or after 4.00pm. • Higher level competitions should be run in the coolest part of the day. Schedule the most demanding competition/competition phases when it is cooler. The lower level competitions generally make lower demands on horses. • Avoid non grassed riding surfaces where possible • **Competition PA announcements – frequently repeated. (See below)**	1. Access to least 2 wash bays with freely running water via hoses. 2. Shaded areas/shelters. 3. **AGGRESSIVE COOLING MEASURES ARE COMPULSORY FOR CCI **/*** EVENTING HORSES - mandatory provision of ad lib ice for use in cooling these horses after cross country phase.** Note – each horse may need to be hosed with 2 hoses for 20-40 minutes if heat stressed.
>33	32:60	These environmental conditions are very high risk and are probably not compatible with safe competition. **Further veterinary consultation/advice will be required before continuing. Event organisers must consult with a veterinarian on the risks of heat stress.** • The timing of events/competition must be considered. **Competitions or the "high exertion phase" of the event must be held during cooler parts of the day; between 7.00am -11.00am and/or after 4.00pm.** • Higher level competitions should be run in the coolest part of the day. Schedule the most demanding competition/competition phases when it is cooler. The lower level competitions generally make lower demands on horses. • Avoid non grassed riding surfaces • **Competition PA announcements – frequently repeated. (See below)**	1. Access to least 2 wash bays with freely running water via hoses. 2. Shaded areas/shelters. 3. **Mandatory provision of ad lib ice for use in cooling horses. AGGRESSIVE COOLING MEASURES ARE COMPULSORY FOR ALL HORSES** Additional recommended requirements for eventing competitions: 4. A shaded area with misting fans 5. A veterinarian to monitor horses. Note – each horse may need to be hosed with 2 hoses for 20-40 minutes if heat stressed.

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2. Competition PA Heat Risk Announcements

a) Explanations of the 6 Minute Threshold in any demanding exercise, (not just Cross country exercise), as being pivotal in heat overload

b) Encouraging riders to pre-cool their horses by hosing them to place lower demands on the horses' cooling systems while they work

c) Encouraging abbreviated warm ups to lighten the load on horses' cooling systems

d) Explanations of aggressive cooling until the horse's temperature returns to 38º C

e) Encouraging use of ice and a shaded area with misting fans, to cool horses after exercise

f) Encouraging hydration of every horse with cool clean water, salt and electrolytes

g) Encourage riders to "house" resting horses in shaded areas and/or on grass surfaces

The Signs of Heat Stress

The signs of heat stress include:

- Rapid shallow breathing (panting)
- Flared nostrils
- Staggering, apparently uncontrollable gait
- Very high body temperature (the skin can be hot to touch)
- Agitated and distressed appearance
- Irrational behaviour such as lashing out with hind limbs
- Occasionally collapse

Heat stress can occasionally be seen during the cooler months, especially in spring when the days can be quite warm, but horses might still be carrying a winter coat.

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Factors that may contribute to Heat Stress

The susceptibility of a horse to heat stress does not solely seem to be influenced by temperature. Certain factors can adversely affect an individual horse's ability to withstand competition in hot weather and include:

- Travelling long distances prior to competition
- An excitable temperament
- Heavy sweating
- Withholding drinking water

Cooling systems in horses

Evaporative cooling is the most important means of dissipation of body heat for the exercising horse and that the liberal application of cold water in shaded, well ventilated places will greatly assist horses in dissipating excessive body heat on hot days.

Evaporation & convection – 60% of cooling - horses shed excess heat through sweating and having air moving over them. Horses standing in the sun without shade or wind flow (breeze) in temperatures above 33 C, start to accumulate heat.

Radiation & conduction – 25% of cooling - once the air temperature is over 3 C, a horse even at rest needs to shed heat – the size & mass of a horse's body makes this harder than for smaller animals, or even a lighter framed horse.

Respiratory loss -15% of cooling – for horses during exercise

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KEY PRINCIPLES

Any organiser of an event to be held in hot weather must understand the following key principles:

1. Humidity and heat – a dangerous mix causing heat overload

Combinations of high heat and humidity impact severely on a horse's main cooling mechanism – sweating and evaporation. A heat stressed horse can have multiple organ failure – it may collapse and die. Heat stress after exercise is most likely to be seen on days when both the ambient temperature and relative humidity are high, and wind speeds are low or absent (conditions of high environmental thermal load).

Unless cooling facilities to equivalent to FEI standard are in place at an event, the FEI strongly recommends that riding activities be suspended when the WBGT Index reaches or exceeds 32-33 º.

2. The 6 Minute Threshold - heat overload for horses working in the heat

Where the WBGT Index is high, horses which have just performed are at risk of suffering a dangerous temperature hike. When the WBGT Index is high, 6.0 - 6.5 minutes of continuous hard work – the '6 Minute Threshold' is pivotal in causing heat stress. Dressage horses do work extremely hard in both the warm up and in their tests. For Showjumpers the effort is generally under 6 minutes, however for Dressage and Cross Country, horses are at risk in heat, because the effort will exceed the 6 Minute Threshold. **Aggressive cooling (see Appendix A) should be used after a performance for a horse when the WBGT is high.**

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3. Wind flow (breeze) dramatically reduces heat overload (heat stress)

Wind flow significantly increases evaporation. The primary cooling mechanism for both horses and humans is evaporation of sweat. On hot days, events should be scheduled early or late, when better wind flow is likely and outside of peak temperature periods

Horses *standing* in the sun without shade or wind flow in temperatures above 33 C, start to accumulate heat. Horses *working* in the sun without wind flow at or above 33 C are at risk.

4. Surface area to body mass (SA:BM)

As body mass increases, relative surface area decreases. An 80 kg rider will have a SA:BM = 1:40, but a 500kg horse has a SA:BM = 1:100. Surface area to body mass ratio impacts negatively on a horse's ability to shed heat through evaporation. Greater muscling in some (Dressage) horses lowers their SA:BM ratios and makes them less effective than other equine athletes at shedding heat.

5. Arena and Surfaces

Shaded and Grassy surfaces do not attract and retain as much heat as other surfaces that are soil based or exposed to full sunlight. Horses restrained next to vehicles/floats/trucks parked on black asphalt, road base, sand are more susceptible to heat stress on hot days.

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- **6. Event Planning**
- Event organisers **MUST** conduct a risk management assessment if competitions/training days are to be held during hot conditions. Decisions and actions that may be considered include;
- Alteration of time of day or time of year at which an event is run
- Reduction in overall effort (shorter distance, less jumping efforts, etc)
- Education of riders, grooms and officials
- Provision of shade
- Provision of adequate means of cooling horses, including ice, fans, hoses, water baths etc
- Provision of veterinary services for heat stressed horses

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- **Appendix A - Aggressive cooling measures**
- Aggressive cooling should be used where a horse's temperature is elevated after any demanding exercise such as Dressage, Jumping, Endurance or Cross Country and when the WBGT Index is high.
- Cooling includes use of high volumes of cold/ice water application, ice boots, repeatedly applying bucketful's of iced/cold water, and repeatedly hosing & immediately scraping water as it warms on the horse's body. Key areas to apply cooling/iced water to are the jugular veins (underside of neck), the femoral arteries (between hind legs) and the heat sink (lower abdomen).
- Aggressive cooling measures should continue until water is no longer heating up on the horse, or until the horse's temperature is back to a healthy 38º C.

- **Appendix B - Anhidrosis in horses (also called 'drycoatedness, or 'the puffs')**
- Anhidrosis, or the inability to sweat to dissipate heat after exercise, is a condition that develops in horses stabled and trained under hot, humid conditions. It is commonly described as 'dry coat' or 'non-sweating' disease. An earlier form of the disease, referred to as 'the puffs' develops in 50 – 60 % of horses under tropical conditions during peak daytime temperatures in the summer months. Horses that lose the ability to sweat efficiently are unable to maintain their body temperature within normal resting limits, and start to pant to blow off heat. During humid weather when the Relative Humidity (RH) exceeds 85%, the efficiency of sweat evaporation from the skin decreases by 5% for every 2% increases in relative humidity, which greatly increases the risk of heat stress. Horses in hard training programs, particularly those on high grain diets are more prone to develop the condition. However, all ages, breeds, pregnant mares, and idle non-working pleasure horses at pasture can be affected. The condition usually begins in spring or summer, particularly during early unseasonable humid conditions where horses have less time to adapt or acclimatise to the seasonal change.
- Some people think when a horse's coat is dry or has only patchy sweat when worked on a hot day, that this indicates that the horse is handling the heat. In fact a dry coat is a cause for great concern – the horse could be losing the ability to sweat (anhydrosis) - indicating a faulty or a completely broken cooling system. ie the horse may suffer heat stroke and collapse.

- **Appendix C – The FEI standard cooling facilities**
- To enable aggressive cooling to be carried out, when the WBGT exceeds 32-33 º, the following should be available at an event:
- **A. Multiple hoses and wash bays for cooling/hosing**
- **B. Large bins (ideally wheelie bins) full of water and bags of ice - for aggressive cooling**
- **C. Free ice – ad lib, An abundance of bags of ice for ice boots or for riders to add to water to cool horses after exercise**
- **D. A shaded area with misting fans**
- **E. An equine veterinarian**


30 30 RULE
If the time between the FLASH of LIGHTNING and the SOUND of THUNDER
BANG!
is LESS THAN 30 SECONDS
TAKE SHELTER for 30 MINUTES after the last thunder is heard

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In Australia, there are 5 to 10 deaths & 45 serious injuries each year as a result of lightning strikes. 85% of all victims are aged 10-35years & are either working outdoors or engaged in some form of outdoor recreation.

(NSW RACE CLUBS) LIGHTNING SAFETY PROCEDURES

WHY DO WE NEED A LIIGHTNIING SAFETY PLAN?

Each year, thunderstorms produce severe weather hazards which cause casualties during outdoor sport and recreational activities. Race Clubs have therefore introduced a Lightning Safety Plan.

WHAT IS THE LIIGHTNIING SAFETY PLAN?

The Lightning Safety Plan is based on what is known as the "30/30" rule, which relates to the duration between the flash of lightning and clap of thunder. This duration is used as a measure of the proximity of the storm and therefore as a denominator in deciding whether to suspend outdoor activities.

HOW DOES THE 30//30 RULE WORK?

The rule of thumb is that every three (3) seconds of delay between a lightning flash and the audible thunder associated with the flash equates to a distance of approximately one (1) kilometre. Accordingly, the thirty (30) seconds flash-to-thunder time interval suggests that the lightning activity is approximately ten (10) kilometres away.

WHEN SHOULD ACTIIVIITY BE SUSPENDED AND SUBSEQUENTLY RESUMED?

All persons should take cover if the flash-to-thunder delay is thirty (30) seconds or less. After the storm has seemingly passed, all persons should remain under cover until thirty (30) minutes after the final flash of lightning or clap of thunder as trailing storm clouds still carry a lingering charge.

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WHIICH LOCATIIONS ARE SAFE TO SEEK SHELTER?

The following locations would normally be regarded as the most appropriate to seek shelter:

- the safest location is inside a large enclosed structure, preferably with electrical/telephone wiring and

plumbing (to provide a safe pathway to the ground for any current) but keeping away from doors,

windows, metal fittings and devices connected to the electricity supply;

- an enclosed metal vehicle such as a car, van or bus

WHIICH LOCATIIONS ARE UNSAFE?

The following locations should be avoided:

- buildings with exposed openings;

- small structures or sheds;

- open field/racecourse;

- in close proximity to the tallest localised structure (eg. surveillance tower, tree, light pole, antenna);

- umbrellas;

- swimming pools, lakes or water generally (eg. showering).

Persons should also refrain from contacting metal objects or using the telephone, computers or any other devices connected to electrical phone lines.

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WHO IS RESPONSIIBLE FOR IMPLEMENTING THE LIGHTNIING SAFETY PLAN?

-On racedays, the Club Secretary Manager/Chief Executive (CEO) and Chief Steward should ensure the Plan is implemented;

- On non-racedays (eg. commercial function), the Club Secretary Manager/CEO or representative;
- trackwork, the Trackwork Supervisor or Crossing Attendant.

WHAT IF SOMEBODY IS STRUCK BY LIGHTNING?

Immediately seek medical assistance and/or an ambulance. However, first aid is required urgently if a person has been struck by lightning. Expired Air Resuscitation ("EAR" – more commonly known as "mouth-to-mouth" resuscitation) can be applied if a person is not breathing but still has a pulse. In the absence of a pulse, cardio pulmonary resuscitation ("CPR") should be used.

Policies for Lightening Safety can be found
NSW Racing
Department of Sport and Recreation