VICTORIAN CIVIL AND ADMINISTRATIVE TRIBUNAL

ADMINISTRATIVE DIVISION

REVIEW AND REGULATION LIST VCAT REFERENCE NO. Z879/2015

CATCHWORDS

Racing – Rules of Racing – Prohibited substances – Cobalt threshold of 200µg/l in equine urine – Offences under AR 175(h)(i), AR 175(h)(ii) and AR 178 – Whether trainers administered a prohibited substance for the purpose of affecting the performance or behaviour of a horse in a race – Urine pharmacokinetics – Bioaccumulation – Use of supplements containing cobalt – Use of cobalt salts and vitamin B12 – Balance of probabilities – Comfortable level of satisfaction.

FIRST APPLICANT	Lee Hope
SECOND APPLICANT	Shannon Hope
RESPONDENT	Racing Victoria Limited
WHERE HELD	Melbourne
BEFORE	Justice Greg Garde AO RFD
HEARING TYPE	Hearing
DATE OF HEARING	1–5, 8–11 August, 5–9, 19, 21, 26–28 September, 10, 14, 17, 20 October, 2, 4 November 2016. 17–18 April, 16–17, 19, 30 July 2018.
DATE OF ORDER	26 October 2018
CITATION	Hope v Racing Victoria Limited (No 2) (Review and Regulation) [2018] VCAT 1688

ORDER

1. The Tribunal finds the applicants guilty on Charge 1 of administering a prohibited substance to a horse for the purpose of affecting the performance or behaviour of a horse in a race contrary to AR 175(h)(i) in relation to:
   (a) *Windy Citi Bear* on 25 June 2014;
   (b) *Best Suggestion* on 5 July 2014; and
   (c) *Choose* on 28 September 2014.
2. Charges 2 and 3 against each of the applicants under AR 175(h)(ii) and AR 178 are alternative charges and are dismissed.

3. The proceeding is to be listed for a hearing as to penalty and costs on a date to be fixed.
4. Costs reserved.

Justice Greg Garde AO RFD
Acting Judicial Member

APPEARANCES:

For Applicants	Mr R de Kretser, Mr R Forrester, Mr M Allen and Mr J O'Connor of Counsel instructed by Nicholsons Lawyers and Consultants
For Respondent	Mr J Gleeson QC, Mr A Dinelli and Mr J Hooper of Counsel instructed by Minter Ellison

REASONS

INTRODUCTION

1 The stewards of Racing Victoria Limited ('RVL')[1] prefer charges under the Rules of Racing of Racing Victoria[2] against licensed trainers Lee and Shannon Hope ('the trainers') arising from the detection of cobalt at concentrations in excess of the 200µg/l threshold then applicable in urine samples taken from the horses:

a) *Windy Citi Bear* on 25 June 2014;

b) *Best Suggestion* on 5 July 2014; and

c) *Choose* on 28 September 2014,

('the horses').

2 The charges were heard by the Racing Appeals and Disciplinary Board ('RAD Board') on 15, 16, 19 and 20 October and 12 November 2015. The RAD Board found the charges under AR 175(h)(i) proven and dismissed the other charges.[3]

3 The trainers applied for a review of the RAD Board's decisions by the Victorian Civil and Administrative Tribunal ('the Tribunal'). The review is conducted by way of a hearing *de novo*.[4]

4 Three charges in the same form are preferred in relation to each horse. The charges are laid in the alternative. For each horse, they are:

(a) One count of breaching AR 175(h)(i) ('Charge 1'). This provides that the stewards may penalise:

> (h) Any person who administers, or causes to be administered, to a horse any prohibited substance:
>
> (i) for the purpose of affecting the performance or behaviour of a horse in a race …

(b) One count of breaching AR 175(h)(ii) 'Charge 2''), which provides that the stewards may penalise:

> (h) Any person who administers, or causes to be administered, to a horse any prohibited substance:
>
> …
>
> (ii) which is detected in any sample taken from such horse prior to or following the running of any race.

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1 The stewards of RVL are referred to as 'the stewards'.

2 The Rules of Racing of Racing Victoria ('the Rules of Racing') incorporate the Australian Rules of Racing, made by the Australian Racing Board, and the Local Rules of Racing, made by RVL. Australian Rules are described as ARs and Local Rules are described as LRs.

3 *RVL Stewards v Lee and Shannon Hope,* Racing Appeals and Disciplinary Board (12 November 2015).

4 *Racing Act 1958* (Vic) s 83OH.

(c) One count of breaching AR 178 ('Charge 3'), which provides:

> … when any horse that has been brought to a racecourse for the purpose of engaging in a race and a prohibited substance is detected in any sample taken from it prior to or following its running in any race, the trainer and any other person who was in charge of such horse at any relevant time may be penalised.

5 At the commencement of the Tribunal hearing, the trainers pleaded 'not guilty' to all charges. On the hearing days in 2016, this proceeding was heard at the same time as proceedings involving Mark Kavanagh and Danny O'Brien.[5] This was done at the request of the trainers in order to give them the benefit of the evidence, and submissions in that case. The hearing of this proceeding resumed in 2018 after the decision of the Court of Appeal in those proceedings.[6]

6 On 16 July 2018, each trainer changed his plea to guilty to Charge 2 for each horse. This makes it unnecessary to consider Charge 3 as it was laid in the alternative to Charge 2. The trainers maintained a plea of 'not guilty' to Charge 1.

7 On the same day, the parties provided the statement of agreed facts set out below.

Statement of agreed facts

8 The agreed facts are in substance:

1. Lee Hope and Shannon Hope … are and were at all relevant times trainers licensed by Racing Victoria and granted permission by Racing Victoria to train in partnership with one another. They are each bound by the Rules.

2. The Hopes were at all relevant times the trainers of the horses *Windy Citi Bear, Best Suggestion* and *Choose*.

3. Racing Victoria prepared spreadsheets [in respect of each of the horses] setting out the supplementation or treatment claimed by the Hopes to have been given to the horse in the lead-up to the collection of the urine samples referred to below.

<u>Windy Citi Bear</u>

4. On 25 June 2014, *Windy Citi Bear* ran in the Charles Rose Jewellers 3YO BM78 Handicap over 1300 metres at Geelong racecourse. The horse placed 5th of 11 runners.

5. A pre-race urine sample taken from *Windy Citi Bear* was analysed, the results of which were reported by:

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5 *Kavanagh v Racing Victoria* [2017] VCAT 386.
6 *Racing Victoria Ltd v Kavanagh* [2017] VSCA 334.

(1) ChemCentre on 21 October 2014 in a certificate of analysis recording a cobalt concentration of 290ug/l with a measurement of uncertainty of 29ug/l at equal to or greater than a 99.7% level of confidence;

(2) the Hong Kong Jockey Club Laboratory ('HKJCL') on 11 November 2014 in a test report recording a concentration of about 300ug/l;

(3) Racing Analytical Services Limited ('RASL') on 15 June 2016 in a certificate of analysis recording a concentration of 277µg/l with an expanded measurement uncertainty for cobalt determination at 200µg/l of 25µg/l at greater than 99.7% confidence; and

(4) HKJCL on 8 July 2016 in a certificate of analysis recording a concentration of about 300µg/l.

Best Suggestion

6. On 5 July 2014, *Best Suggestion* ran in the Sportingbet.com.au Handicap over 1400 metres at Caulfield racecourse. The horse placed 8th of 9 runners.

7. A pre-race urine sample taken from *Best Suggestion* was analysed, the results of which were reported by:

(1) ChemCentre on 21 October 2014 in a certificate of analysis recording a cobalt concentration of 510µg/l with a measurement of uncertainty of 51µg/I at equal to or greater than a 99.7% level of confidence;

(2) HKJCL on 11 November 2014 in a test report recording a concentration of about 550µg/l;

(3) RASL on 15 June 2016 in a certificate of analysis recording a concentration of 520µg/l with an expanded measurement uncertainty for cobalt determination at 200µg/l of 25µg/l at greater than 99.7% confidence; and

(4) HKJCL on 13 July 2016 in a certificate of analysis recording a concentration of about 550µg/l.

Choose

8. On 28 September 2014, *Choose* ran in the Citiopera Plate over 1100 metres at Caulfield racecourse. The horse placed 5th of 15 runners.

9. A pre-race urine sample taken from *Choose* was analysed, the results of which were reported by:

(1) ChemCentre on 15 December 2014 in a certificate of analysis recording a cobalt concentration of 450µg/l with a

measurement of uncertainty of 45µg/l at equal to or greater than a 99.7% level of confidence;

(2) HKJCL on 7 January 2015 in a test report recording a concentration of about 440µg/l; and

(3) RASL on 15 June 2016 in a certificate of analysis recording a concentration of 396µg/l with an expanded measurement uncertainty for cobalt determination at 200µg/l of 25µg/l at greater than 99.7% confidence; and

(4) HKJCL on 7 July 2016 in a certificate of analysis recording a concentration of about 440µg/l.

10. Each of ChemCentre, HKJCL and RASL was at all relevant times an Official Racing Laboratories [sic] within the meaning of the Rules.

11. There is no challenge to the collection, storage and integrity of the samples mentioned in paragraphs 1 to 9 above.

12. The stewards conducted other testing of urine samples on the three horses named in paragraph 2 and other horses trained by the Hopes, the results of which are contained in Exhibit 'O'.

13. Whilst the stewards did purchase similar feed and supplements used by the Hopes for testing and analysis they did not seize the specific products that the Hopes indicated had been given to the horses.

Table of race details and last treatments

9 RVL submitted a table summarising the race details and last treatments for the horses as contained in the evidence. I have added the urine cobalt concentration test results at the foot of the table. The table is an accurate and convenient means of summarising the information near to race day contained in the administration spreadsheets.[7]

Table 1

Horse	***Windy Citi Bear***	***Best Suggestion***	***Choose***
Race date	25 June 2014	5 July 2014	28 September 2014
Morning track work on race day	Lee and Shannon in attendance at Seymour. Lee Hope returns to Kilmore to shower and get	Lee and Shannon Hope in attendance at Seymour. Lee Hope returns to home Kilmore to shower and get	Lee and Shannon Hope in attendance at Seymour. Lee Hope returns to home Kilmore to shower and get

[7] RVL submitted spreadsheets setting out the supplementation said to have been given to the horses prior to the collection of the samples ('administration spreadsheets'). They are referred to in the statement of agreed facts and in the evidence.

	ready for race meeting.	ready for race meeting.	ready for race meeting.
Location of horse before transportation to race	Seymour	Seymour	Seymour
Involvement in loading horse for transport from Seymour to race	Shannon Hope	Shannon Hope	Shannon Hope
Involvement in transporting horse to race	Lee Hope drove the float from Broadford to Geelong	Transport company	Transport company
Race location	Geelong	Caulfield	Caulfield
Sample time	1.14pm	11.45am	11.54am
Race time	3.30pm	2.25pm	2.10pm
Last treatment	24 June 2014 • Treatment logbook: Nothing recorded; • Administration spreadsheet: Administration by feed of Activiron (30), Tri-cal (60) and Sporthorse (200) given at PM	4 July 2014 • Treatment logbook: Nothing recorded; • Administration spreadsheet: Administration by feed of Activiron (30), Tri-cal (60) and Sporthorse (200) given at PM	27 September 2014 • Treatment logbook: "4.30am 5cc Gestrozol"; • Administration spreadsheet: Intravenous administration of Tripart (20) at unspecified time and administration by feed of Activiron (30), Tri-cal (60) and Sporthorse (200) given at PM
Test result[8]	277–300µg/l	510–550µg/l	396–450µg/l

[8] The laboratory tests show slightly different concentration results. However, all exceed the threshold level of 200/µg/l. In some of the evidence, the results used were *Windy Citi Bear* (290µg/l), *Best Suggestion* (510µg/l) and *Choose* (450µg/l) as reported by ChemCentre. While recognising that the results show a range, application of any figure within the range makes no difference to the result of the proceeding.

RVL test results

10 RVL also prepared a table showing the test results for the urine cobalt concentrations of horses from the trainers' stables over the period from 5 April 2014 to 20 April 2015.[9] The table showed frequent readings above normal levels over the period up to 1 November 2014.

11 Of 25 test results, 10 test results are above 100µg/l. All of the high test results are pre-race results. The test results showed the following:

(a) *Windy Citi Bear* showed a post-race urine cobalt test result of 6µg/l on 5 June 2014 when it ran 1st at Geelong, followed by a pre-race urine cobalt test result of 290µg/l on 25 June 2014 when it ran 5th also at Geelong.

(b) *Best Suggestion* showed a normal urine cobalt test result of 9µg/l on 15 June 2014 in a post-race test when it ran first at Bendigo. Thereafter, it recorded higher levels of urine cobalt concentrations of 510, 160 and 66µg/l in pre-race tests on 5, 12 and 23 July 2014 at Caulfield, Flemington and Caulfield, where it ran 8th, 5th and 5th respectively.

(c) *Choose* showed a high urine cobalt test result of 450µg/l in a pre-race test on 28 September 2014 when it ran 5th at Caulfield. It had a series of normal results of 8µg/l, 11µg/l, 3µg/l, 9µg/l, 6µg/l and 8µg/l on 20 December 2014, and 1, 17 (pre-race), 17 (post-race), 31 January 2015, and 14 March 2015, when it ran 5th, 9th, 1st, 1st, 1st and 8th, all at Flemington. The urine cobalt test results for *Choose* for the period December 2014 to April 2015 include six test results for all of which were normal.

(d) The table also shows the test results for *Fenway* – another stable horse of the trainers. On 2 October 2014, *Fenway* recorded a post-race urine cobalt concentration of 19µg/l, running 1st at Bendigo. On 15 October 2014, *Fenway* recorded a pre-race urine cobalt concentration of 42µg/l, running 4th at Caulfield. However, on 1 November 2014, *Fenway* recorded a high pre-race urine cobalt concentration of 200µg/l, running 3rd at Flemington. A later result, on 21 February 2015, shows *Fenway* with a pre-race urine cobalt concentration of 6µg/l, running 4th at Flemington.

12 The wide range of results suggests that some horses were administered cobalt-containing substances on race day or near to race day while others were not. Some horses were administered cobalt-containing substances on some days, but not on others. Post-race test results were generally lower.

13 In late November 2014, Dr Roberts was appointed veterinarian for the trainers' stables and the use of cobalt supplements and medications ceased.

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[9] The table is described as exhibit 'O' in the Agreed Statement of Facts.

All test results from his appointment from November 2014 until 20 April 2015 show normal urine cobalt concentrations of about 11µg/l or less.

Further testing by LGC

14 In 2018, further testing of the urine samples collected from *Windy Citi Bear*, *Best Suggestion* and *Choose* was carried out in the United Kingdom by LGC Testing Laboratory ('LGC'), an official racing laboratory for the purpose of identifying the respective proportions of cobalt held in each sample in inorganic (cobalt salts) and organic form (vitamin B12). The test results are subject to significant qualifications, including that:

(a) the methodology used by LGC is not validated or accredited;

(b) the concentrations of vitamin B12 found in each urine sample exceeded the calibration range and cannot be considered accurate; and

(c) an estimated range of the concentration of vitamin B12 in each urine sample has been provided.

15 Despite these limitations, the LGC test results provide insight into the proportions of inorganic cobalt and organic cobalt contained in the urine samples of the horses.

16 The results are summarised in a report by Mr Ross Wenzel, a scientist and consultant retained by the trainers, and are conveniently expressed in the following table prepared by RVL.

Table 2

Urine Sample	**Total cobalt (µg/l)** (Total cobalt is drawn from the RASL analysis results)	**Organic cobalt (µg/l)** (Estimated range of vitamin B12 concentrations reported in the urine samples by LGC)	**Cobalt present in vitamin B12 (µg/l)** (Cobalt present in vitamin B12 is calculated by multiplying the organic cobalt concentration by 0.0435 as vitamin B12 contains 4.35% cobalt by mass)	**Inorganic cobalt (µg/l)** (Inorganic cobalt is determined by subtracting the total cobalt from the calculated concentration of cobalt present in vitamin B12)
V296146 (*Best Suggestion*)	550	5000–6000	218–261	289–332
V297404 (*Windy Citi Bear*)	300	3500–4500	152–198	102–148
V318923 (*Choose*)	440	1000–2000	44–87	353–396

17 In the case of *Windy Citi Bear* and *Best Suggestion*, the test results suggest that the cobalt found in the urine samples on the race days when excessive cobalt concentrations were recorded, was derived both from cobalt salts and vitamin B12, while in the case of *Choose*, the cobalt in the urine sample was principally derived from cobalt salts.

The cobalt threshold

18 The administration of medications to horses on race day without the stewards' permission is prohibited, and has been prohibited at all relevant times. At the time of the charges, AR 178E provided:

> Notwithstanding the provisions of AR 178C(2), no person without the permission of the Stewards may administer or cause to be administered any medication to a horse on race day prior to such horse running in a race.

19 The word 'medication' is widely defined in AR 1 to mean 'any treatment with drugs or other substances'. Race day starts at midnight on the preceding day. The minimum penalty for contravention of AR 178E is six months' disqualification.[10]

20 The prohibition of the administration of medication on race day was well known to the trainers, as it is across the racing industry. Shannon Hope described it as 'an absolute no-go zone' in one conversation with the stewards. For reasons which will emerge, it may be doubted that this statement represented the actual practice in the trainers' stables.

21 On 14 April 2014, LR 68A was introduced in Victoria providing that cobalt in concentrations exceeding 200µg/l in equine urine was a prohibited substance.

22 On 1 January 2015, a cobalt concentration limit of 200µg/l in equine urine was introduced across Australia by an amendment to the Rules of Racing,[11] and LR 68A was repealed.

ISSUE FOR DETERMINATION

23 As a result of the pleas of guilty to Charge 2, and the admissions contained in the agreed statement of facts, it is only necessary to refer to some of the evidence before the Tribunal.

24 It is not in issue that the trainers administered or caused to be administered a prohibited substance to each horse. The only issue in dispute is whether they did so for the purpose of affecting the performance or behaviour of that horse in a race.

25 If the Tribunal finds on a balance of probabilities to a comfortable level of satisfaction that the prohibited substance was administered or caused to be

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10 AR 196(5).
11 AR 178C(1)(l).

administered to affect the performance or behaviour of the horse in a race, the trainers are guilty of contravening AR 175(h)(i) ('Charge 1').

26 If the Tribunal does not make this finding, the trainers are guilty of contravening AR 175(h)(ii) ('Charge 2') in accordance with their pleas.

27 This is a civil proceeding in which the standard of proof is on the balance of probabilities. The Tribunal requires a comfortable level of satisfaction that a charge is established.[12] The Tribunal is not bound by the rules of evidence and may inform itself in any manner in which it sees fit.[13]

Mental intent required by a person charged

28 In *Racing Victoria Limited v Kavanagh*,[14] the Court of Appeal considered the extent of knowledge required of a person charged under AR 175(h). It also considered what was necessary to establish the purpose required for an offence against AR 175(h)(i).

29 McLeish JA rejected the contention that the offence in AR 175(h) required a person to be aware what the substance is when it is administered, concluding:

> …it is not necessary that the person know what the substance is, in order to give the requisite authority, or to give the direction, for its administration and to contemplate that such authority or direction will be acted upon. The person may simply know of the existence of the substance and authorise its administration, ignorant as to what it is and still less aware as to its character as a prohibited substance. Such a person will have 'caused' the substance to be administered. Or the person may not even know of the existence of the substance yet give permission to another person to deal with the horse in terms that authorise the second person to administer to it substances of whatever kind, whether prohibited or not… Again, by the width of the authority given, the first person in such circumstances 'causes' the second to administer whatever substances he or she thereafter administers to the horse.[15]

30 Both McLeish JA and Cavanough AJA discussed what is required in order to establish the requisite intent for the purpose of affecting the performance or behaviour of a horse in a race within the meaning of AR 175(h)(i).

31 McLeish JA said:

> …any action taken to improve the health of a horse could be said to have been done for the purpose of affecting its performance in a race. Doubtless that might be said in a literal sense to be so, but it seems

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12 *Karakatsanis v Racing Victoria Ltd* (2013) 42 VR 176, 189 [37]–[40]; *Maund v Racing Victoria Ltd* [2016] VSCA 132 [70].
13 *Victorian Civil and Administrative Tribunal Act 1998* (Vic) s 98(1)(c).
14 [2017] VSCA 334.
15 Ibid [120].

> more likely that a more direct connection between the administration of the substance and the posited effect in a race is required.[16]

32 Cavanough AJA stated:

> Nevertheless, I make the following observations about the 'purpose' limb of AR175(h)(i). It seems to be accepted on all sides that charges under AR175(h)(i) involve some kind of mental element. As indicated above, I consider that the words in the chapeau of AR175(h) convey a basic mental element, namely that the person must intend that *a* substance be administered to a horse. It seems to me that the 'purpose' provision in sub-paragraph (i) of AR175(h) expands that basic mental element with the result that a person cannot be found to have administered a substance, or to have caused it to be administered, *for the purpose of affecting the performance or behaviour of a horse in a race or of preventing a horse starting in a race*, as the case may be, unless it be established that the person had knowledge or a belief about the identity of the substance, at least to the extent of having knowledge or a belief as to the effect or effects that the substance was likely to have on the horse.[17]

33 Maxwell P dissented. He said as to knowledge and purpose:

> In my view, a person could not be shown to have had the relevant purpose – of enhancing performance –without knowledge or belief as to what it was that he or she was administering or causing to be administered.[18]

34 Before turning to review the evidence, which is predominantly expert evidence, it is helpful to refer to authority as to expert evidence generally and how it should be prepared and received.

Expert evidence

35 In *Tuite v The Queen*, the Court of Appeal considered the value and weight to be given to expert evidence.[19] The Court referred to the dangers and risks of junk science, and the need for expert evidence to be accurate, reliable and scientifically validated.

36 The Court of Appeal said:

> As the Supreme Court of Canada said in 2007:
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> > Evidence that is not sufficiently reliable is likely to undermine the fundamental fairness of the criminal process.
>
> The dangers of 'junk science' are obvious, as that Court had pointed out in an earlier decision:
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> > Dressed up in scientific language which the jury does not easily understand and submitted through a witness of impressive antecedents, this evidence is apt to be accepted by the jury as

16 Ibid [127].
17 Ibid [154] (emphasis in original).
18 Ibid [48].
19 (2015) 49 VR 196 (Maxwell ACJ, Redlich and Weinberg JJA).

being virtually infallible and as having more weight than it deserves…[20]

37 The Court of Appeal also considered the validation process:

> Validation is the process whereby the scientific community acquires the necessary information to:
>
> - assess the ability of a procedure to obtain reliable results;
> - determine the conditions under which such results can be obtained;
> - define the limitations of the procedure.
>
> The validation process identifies aspects of a procedure that are critical and must be carefully controlled. [21]

38 The Court concluded:

> In our view, the touchstone of reliability for scientific evidence must be trustworthiness, and trustworthiness depends on validation. We would respectfully adopt what the US Supreme Court said in *Daubert*, as follows:
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> > We note that scientists typically distinguish between 'validity' (does the principle support what it purports to show?) and 'reliability' (does application of the principle produce consistent results?). Although 'the difference between accuracy, validity, and reliability may be such that each is distinct from the other by no more than a hen's kick,' … our reference here is to *evidentiary* reliability — that is, trustworthiness. In a case involving scientific evidence, *evidentiary reliability will be based upon scientific validity*.
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> …
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> Special care must be taken, of course, in a case where the proposed expert evidence is based on 'new science' properly so-called. In such a case, the party proposing to rely on the expert evidence will need, as the Supreme Court in Canada has said, to establish that the underlying science is 'sufficiently reliable to be admitted in a court of law'.[22]

39 The observations of the Court of Appeal are as applicable to disciplinary proceedings as they are to criminal proceedings.

THE EVIDENCE

40 On 27 October 2014, Shannon Hope was interviewed by the stewards in relation to the high concentration of cobalt in urine in pre-race test results for *Windy Citi Bear*, and *Best Suggestion*. He said he had no explanation for the findings, unless the cobalt was in his supplements.

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20 Ibid [89] (citations omitted).
21 Ibid [92] (citations omitted).
22 Ibid [101], [106], citing *Daubert v Merrell Dow Pharmaceuticals Inc* 509 US 579, 590 (1993) (emphasis in original).

41 He was asked how the findings could be so high, given the entries in the treatment diary. He said that it was standard practice to treat horses with supplements three days before race days and on Wednesday morning for a Saturday race meeting. Shannon Hope said that he and his wife treated the horses together with the vets. He said he had never looked into cobalt, or done any research about it.

42 On the 17 November 2014, in a later interview, Shannon Hope was asked about the feed supplements that he used. He said that he could not give any explanation for the positive results. He was unable to explain the positive findings in relation to the horses.

43 Lee Hope was also interviewed following the positive findings. He described the treatment of the horses at the stable as 'a fairly basic form of treatment'. He said that he had never heard of cobalt until it came up on the news.

44 Both trainers gave sworn evidence before the RAD Board and the Tribunal.

Evidence of Shannon Hope

The RAD Board

45 Shannon Hope listed the supplements and medications provided to horses in work at his stables in a statement to the RAD Board. He said that he did not administer cobalt to any of his horses.

46 He said he was unaware that cobalt was included in the feed supplements which the horses received daily. He also said that he was unaware that some of the injectable medications supplied to the horses contained cobalt.

47 He said that after the stewards came on 27 October 2014, he did not change anything until advised by his veterinarian, Dr Roberts to do so. Since the feed regime was changed by Dr Roberts in November 2014, there had been a dramatic drop in cobalt levels in the horses.

48 When asked whether he read the stewards' notice about a cobalt threshold published in April 2014, Shannon Hope said that he did read the notice and was under the impression that cobalt was an injectable, and that there was now a threshold. He then said that he checked out the stable's products and injectables looking at the ingredients for the word 'cobalt'.

49 Shannon Hope said that three cobalt-containing oral supplements were put into *Windy Citi Bear*'s feed on the day before the horse race on 25 June 2014. Likewise, the feed provided to *Best Suggestion* the day before race day contained cobalt supplements. Neither *Windy Citi Bear* nor *Best Suggestion* received any intravenous injection on the day before race day. *Choose* received a cobalt-containing supplement by intravenous injection the day before race day.

50 Shannon Hope confirmed that he had double-checked the stable's products, mainly injectables in April on receipt of the stewards' notice, and that his

evidence on this matter was true. He said that he would administer nothing on race day – it was just a 'no-go' zone.

The Tribunal

51 Shannon Hope confirmed that all supplements given to the horses were entered into the treatment book. He said that he knew that nothing could be given on race day, and that he had not done so.

52 He confirmed that all three horses were housed at his Seymour stable. Shannon Hope said that he would help load the horses onto the truck before the race. The trips from Seymour to Geelong, and Seymour to Caulfield took 2½ hours. The horses had to be at the track two hours ahead of a race. He said that he did not administer anything to the horses prior to leaving his stables.

53 At the Tribunal hearing, Shannon Hope admitted that his evidence at the RAD Board was untruthful. He said he did not check the products after receiving the notice concerning cobalt from the stewards. He admitted that he had stuck tenaciously to his lie, and that he had made a conscious decision before entering the witness box to tell lies about this. He continued to deny that he was medicating on race days.

Evidence of Lee Hope

RAD Board

54 Lee Hope said that he first became aware that cobalt had been found in the urine of *Windy Citi Bear* and *Best Suggestion* when the stewards visited him. He said no changes were made at that time to the feed, supplement or injectable regime of horses at his stable.

55 He was present when *Windy Citi Bear* ran at Geelong, and when *Best Suggestion* and *Choose* ran at Caulfield.

56 Lee Hope said that he was not aware that the supplements administered to the horses contained some cobalt. He denied that Shannon Hope was administering additional supplements than had been disclosed, or in greater quantities.

The Tribunal

57 Lee Hope said that in 2014 he went to Seymour most days arriving at about 4.30am. The horses would be prepared and worked. He would watch track work every morning.

58 He said Shannon Hope fed the horses stabled at Seymour, including each of the horses. They consulted on supplements and medications and had done so for years. The horses were administered by Shannon Hope. Water was taken away from horses the night before they raced, leaving the horses only with a little water, but not big buckets on race day.

RVL's evidence

59 RVL relied on expert evidence as to how the results of the urine tests of the samples taken from the horses could have occurred. Some of the expert witnesses retained by RVL gave evidence relevant to the issue remaining for determination:

(1) Dr Martin Wainscott;

(2) Dr John Vine;

(3) Dr Brian Stewart;

(4) Dr Stuart Paine; and

(5) Professor Brynn Hibbert.

Dr Martin Wainscott

60 Dr Wainscott was formerly the Regulatory Veterinarian for Harness Racing NSW. Subsequently, he was the Regulatory Veterinarian for the Emirates Racing Authority in Dubai.

61 Dr Wainscott conducted a clinical trial for Harness Racing NSW in which five horses were administered 10ml of a commercial supplement containing cobalt known as Hemo-15 intravenously for three consecutive days. Analysis of the data showed the average half-life for the production of cobalt in urine was found to be 48 minutes, and the average half-life for washout to be 4.9 hours. Even with the intensive treatment regime, all levels had returned to a single digit baseline figure twenty-four hours after the last treatment in the trial.

62 These results reflected the results of a similar trial conducted for the Hong Kong Jockey Club ('HKJC') using Hemo-15 and another commercial product known as VAM, administered intramuscularly. This study showed that urinary cobalt concentrations remained above 200µg/l for a period of about eight hours in the case of VAM, and less than three hours in the case of Hemo-15.

63 A further study of commercial products containing cobalt, selected for the effect of oral supplementation were Hemopar, Hermatinic and Farriers Formula. All these commercial products contained cobalt. The maximum level of cobalt recorded at any time during the study was 113µg/l. This remained above a level of 75µg/l for only 3.8 hours.

64 Dr Wainscott noted that the trials conducted by Harness Racing NSW and HKJC showed a rapid return to normal levels within 24 hours after registered products containing therapeutic levels of cobalt were administered to racehorses. There was no evidence of an accumulative effect on urine cobalt levels as a result of supplementation.

65 Dr Wainscott made the observation that cobalt supplementation was widespread in Australia. However, three large population studies

undertaken by Harness Racing NSW involving in excess of 11,000 samples, showed the normal mean urine cobalt level to be less than 10µg/l.

66 In his opinion, the stated treatment regimes for the horses did not offer any explanation for the test results. He considered that:

(a) The results of 290µg/l for *Windy Citi Bear* on 25 June 2014 and 510µg/l for *Best Suggestion* on 5 July 2014 were not consistent with the stated treatment regime shown in the administration spreadsheets.

(b) In the case of *Choose*, a program of oral supplementation, together with a number of injectable preparations given in the days prior to a race, produced normal test results on five different race days over four months. The reading of 450µg/l on 28 September 2014 was not consistent with the stated treatment regime.

67 Dr Wainscott concluded that there appeared to be only two possible explanations for the cobalt readings above threshold. They were race day administration of a therapeutic cobalt containing product, or the administration of a highly concentrated form of cobalt at some time prior to the time of sampling.

Dr John Vine

68 Dr Vine is a highly qualified and experienced scientist, and is widely published. He was the laboratory director of RASL for 24 years.

69 Dr Vine noted that the reference to cobalt in LR 68A and AR 178C(1)(l) was a reference to total cobalt in any form. He stated that the most accurate way of measuring the amount of cobalt in a urine sample was the method used in this case. The test was a standard test, and almost universally used.

70 Dr Vine observed that in a test conducted by Mr Wenzel (expert for the trainers) using a single horse, given an intravenous dose of 10mg of vitamin B12, the total cobalt concentration two hours after the injection was 169.7µg/l. Twelve hours after administration, the total cobalt concentration had declined to 3.6µg/l. Although an experiment involving a single horse was not definitive, the test clearly indicated that the injection of 10mg of vitamin B12 prior to the day of a race would not result in a cobalt concentration in excess of 200µg/l at midday on race day.

71 Dr Vine observed that the administration spreadsheets for the horses showed that:

(a) The treatment regime for *Windy Citi Bear* was similar in the weeks leading up to the collection of urine samples. Yet the sample collected from *Windy Citi Bear* on 5 June 2014 had a urine cobalt concentration of 6µg/l, whereas that collected on 25 June 2014 had a urine cobalt concentration of 290µg/l.

(b) In the case of *Best Suggestion*, the treatment regime was very similar in the weeks leading up to the collection of samples on 15 June 2014, and 5, 12 and 23 July 2014. However, the measured cobalt concentrations were 9, 510, 160 and 66µg/l respectively.

(c) The treatment regime for *Choose* was also very similar in the week leading up to the collection of samples on 20 December 2014, and 1 and 17 January 2015 resulting in measured concentrations of cobalt of 8, 11, 3 (pre-race), 9 (post-race) µg/l respectively. The treatment prior to sample collection on 28 September 2014 was different as another commercial supplement containing 10mg of vitamin B12 was used in addition to the usual feeds and supplements. The race day urine sample was shown to have a cobalt concentration of 450µg/l. It was unlikely that the use of the additional supplement would contribute significantly to the measured value of 450µg/l.

72 In substance, Dr Vine said the treatment regimes for the horses did not result in the measured urinary cobalt concentrations.

Dr Brian Stewart

73 Dr Stewart is a veterinarian and was Head of Equine Welfare and Veterinary Services with RVL at the time he gave evidence. He has previously held senior equine veterinary regulatory appointments in Hong Kong and Singapore.

74 Dr Stewart said that the administration by the trainers of cobalt in the form of proprietary and mineral supplements was not especially high when compared to the routine supplementation of Australian and international racehorses. He said there were at least 25 commercial products that contain significant amounts of cobalt available in Australia.

75 He observed that in the present case, there was significant variation between the cobalt levels obtained from the same horses on different race days, and between the trainers' other stable horses, and the positive horses. This was not consistent with the view that elevated urine levels were the result of the routine supplementation program. If that were the case, there would be consistent elevated readings across the entire group of horses.

76 Dr Stewart noted that a report of urine cobalt levels of 1650 racehorses tested for urine cobalt levels on race day in Victoria over the period from April 2014 to May 2015, showed a mean race day urine cobalt level of about 11.5µg/l.

77 He stated that cobalt can be injected or administered orally through feed. When injected, all of an injected dose of cobalt is absorbed, resulting in a relatively dramatic elevation in urine cobalt level which is short lived, compared with oral administration which results in a lower spike. Post-administration urine levels are much higher when the dose is administered by injection rather than by oral means.

78 He noted that another trial showed urine cobalt level surveys conducted on about 12,000 samples from normally supplemented racehorses reported a mean urine cobalt level of 5.29µg/l with a standard deviation of 5.75µg/l. The idea that normal supplementation can result in cobalt levels approaching or exceeding the race day urine threshold of 200µg/l was not supported by any race day urine cobalt level survey, or the results of any administration trials.

79 He pointed to the Wainscott study which reported that the urinary half-life (the time it took for urine levels to decrease by 50%) after injection of cobalt is 4.9 hours. The British Horseracing Authority ('BHA') administration trials also showed a rapid fall in urine cobalt levels after normal supplementation doses.

80 It was significant that the HKJC and New Zealand data showed no horses returning a level above 100µg/l without supplementation.

81 Additionally the study by RVL of 1650 race day urine samples from Victorian racehorses from April 2014 to May 2015, showed that 21 returned levels in excess of 100µg/l. Of these 21 horses, 10 were trained by the trainers. Of 50 horses which returned levels of 50µg/l or more, 17 were trained by the trainers.

82 Dr Stewart agreed that differences in hydration levels, kidney function and the time of voiding, relative to the time of administration of a substance may impact on the concentration of a substance in urine. However, there is no evidence that there was a significant impact on the concentration of any prohibited substance in urine.

83 Dr Stewart noted that there was nothing about the trainers' racehorse population that was in any way exceptional, or that could account for a 20 to 40 fold difference in the race day urine cobalt levels of some racehorses presented by the trainers to race, compared with the Australian and international mean race day urine cobalt levels.

Dr Stuart Paine

84 Dr Paine is Associate Professor of Veterinary Pharmacology at the School of Veterinary Medicine and Science within the University of Nottingham, UK. He is a consultant veterinary pharmacology adviser to the BHA.

85 Dr Paine said that the race day urine cobalt concentrations determined for *Windy Citi Bear*, *Best Suggestion* and *Choose* were highly unlikely to occur in the normal horse population.

86 He based this view on surveys and studies which measured cobalt in post-race horse urine samples. He concluded that the prospect that the high levels of cobalt found in the urine of the horses could occur in the normal horse population were less than 1:62,900 based on a 10,306 horse population study, and less than 1:10,000 based on pharmacokinetic modelling and simulation.

87 He found that:

(a) In the case of *Windy Citi Bear,* the highly plausible result of 6µg/l on 5 June 2014 is to be contrasted with the high reading on 25 June 2014. This suggests that a different dosing regimen was used prior to 25 June than prior to 5 June 2014.

(b) Likewise, the highly plausible result of 9µg/l on 15 June 2014 for *Best Suggestion* compared to the high readings suggests that a different dosing regimen was used prior to 5, 12 and 23 July 2014 than prior to 15 June 2014.

(c) Finally, as to *Choose,* the highly plausible results of 8µg/l on 20 December 2014, 11µg/l on 1 January 2015 and 19µg/l and 3µg/l on 17 January 2015 suggests a different dosing regimen was used prior to the high reading on 28 September 2014.

88 Dr Paine was engaged by the BHA and by LGC to interpret the LGC results. He mapped the results in Table 1 against the concentrations of cobalt expected over time if a standard commercial vitamin B12 supplement were used, and if a high dose of inorganic cobalt were administered.

89 He then considered possible administration scenarios consistent with the urine sample test results in Table 2. This led him to identify possible administration scenarios.

90 Dr Paine found that:

(a) for *Windy Citi Bear* and *Best Suggestion,* a plausible explanation for the vitamin B12 and cobalt urine concentrations found in the urine samples is an injection administration of approximately 20–30mg (2–3 times recommended dose) of vitamin B12 two hours prior to when the samples were taken; and

(b) for *Choose,* possible explanations for the vitamin B12 and cobalt urine concentration found in the urine sample are:

(1) a vitamin B12/inorganic cobalt commercial product with a lower ratio of inorganic cobalt to the standard vitamin B12 product given two hours prior to testing;

(2) a vitamin B12 oral supplement together with a standard commercial vitamin B12 product given two hours before the sample was taken; or

(3) a high dose of inorganic cobalt (eg 100mg cobalt chloride) given approximately 24–36 hours prior to testing, followed by an injection administration of 10mg of a vitamin only supplement given two hours before testing.

91 Dr Paine reviewed the expert reports of Professor Chapman, Dr Major and Mr Wenzel, experts for the trainers. He concluded that there is

overwhelming evidence that shows no significant accumulation of cobalt in the urine pharmacokinetics of horses receiving daily doses of a cobalt supplement.

92 Dr Paine explained that if you give a horse a large vitamin B12 administration, especially near to a sample being taken, you can get a high cobalt level. This was because 4.4% of vitamin B12 by mass was cobalt. Accordingly, a big dose of vitamin B12 close to when a sample is taken could exceed the cobalt threshold.

93 Dr Paine said that the Rules of Racing had effectively a zero tolerance of cobalt on race day, apart from natural background levels. If supplements were used close to race day, there is the risk of a positive test result.

94 The trainers administered some cobalt-containing substances daily and another biweekly over 15 day periods. Dr Paine said that if enough cobalt or vitamin B12 supplement is in a horse's feed or injected, and a sample taken within two to three hours, high levels of urine cobalt concentrations can be achieved. As you go further out in time, the dose required goes up exponentially. In theory, if you have a large enough dose of cobalt and vitamin B12 in the feed, and the race is later in the morning, you might breach the threshold, but it would have to be a very large dose of vitamin B12.

95 Dr Paine concluded that the levels of cobalt detected in the urine of the trainers' horses suggested that a different dosing regimen was used and that this involved a higher cobalt dose administered near to competition.

Professor Brynn Hibbert

96 Professor Hibbert is Emeritus Professor of Analytical Chemistry at the University of New South Wales, School of Chemistry. He is an analytical chemist and a statistician.

97 Professor Hibbert determined the mass of cobalt administered to the horses by injection or feed by reference to the administration spreadsheets. He mapped this information against the days on which urine was analysed.

98 He used studies to determine the probability of a horse exposed to regular administration regime exceeding 200μg/l of cobalt on race day. The probability of a horse from a total of 1277 horses given a regular diet and supplements returning the same race day results ranged over one in a million in the case of *Windy Citi Bear*; one in over 12 million in the case of *Choose* to over one in 27 million in the case of *Best Suggestion*.

99 Reviewing the declared administration regime for each of the horses, Professor Hibbert concluded that in addition to the declared administration, a high dose of cobalt was administered on the day before racing, or a lower dose was administered on race day.

The trainers' expert evidence

100 The trainers relied on their own evidence and on expert evidence. They also relied on a statement by Dr Timothy Roberts, their veterinarian since November 2014.

101 They rely on the expert evidence of:

(1) Mr Ross Wenzel;

(2) Dr Derek Major; and

(3) Emeritus Professor Colin Chapman.

102 Each of these expert witnesses provided reports, gave evidence and were cross-examined on behalf of RVL.

Dr Timothy Roberts

103 Dr Roberts has been a veterinarian for over 40 years with clinics in Moore Park, Sydney and at Flemington Racecourse. He currently works with thoroughbred horse trainers in Australia and overseas.

104 He met with Shannon Hope in late November 2014, and reviewed the feed, treatment, pre-race and post-race regimes at the trainers' stables. He was concerned with the training regime at the stables because the trainers were over-medicating their horses with therapeutic supplements. He said Shannon Hope was using three to four times the recommended dosage of B12 supplements.

105 Dr Roberts advised Shannon Hope to completely change his supplement regime and to stop using a number of injectable medications. He did not observe any illegal supplementation or treatment at the stables.

106 When he was informed by Shannon Hope that he had been notified of two excessive cobalt readings, he was not surprised that the cobalt levels were above normal. The trainers' administration regime of vitamin B12 was particularly high by comparison with other training regimes under his supervision.

107 After implementing changes to the supplement and medication regime, the trainers have not had any subsequent issues with cobalt levels in their horses.

Mr Ross Wenzel

108 Mr Wenzel is a medical scientist and the senior hospital scientist at Royal Northshore Hospital. He is in charge of the trace elements section of New South Wales Health Pathology.

109 Mr Wenzel commented on the results of the LGC tests. He said that while the measured vitamin B12 concentration found in the LGC samples exceeded the assay calibration range, it could nonetheless be concluded that at least 33µg/l of the total cobalt measured in the urine samples could be attributed to organic cobalt.

110 He considered that too few scenarios were presented by Dr Paine to describe potential supplement administration regimes. The scenarios presented did not allow for other scenarios such as multiple injections of varying doses or the delayed absorption and excretion that could be observed following oral administration.

111 Mr Wenzel said that he would expect a single injection of cobalt to be excreted 'pretty quickly'. He said that a finding by the BHA after a supplement administration study, that all of the horses' urine cobalt levels returned to below 200µg/l within 6.6 hours sounded reasonable.

112 Mr Wenzel was informed of a race day urine sample study by RVL which sampled 1650 horses to determine normal population cobalt concentration. He was told that the trainer's horses were over represented in returning high cobalt concentration levels.

113 He agreed that the most likely explanation for these results was that cobalt-containing supplements were administered on the morning of the day on which the sample was taken, assuming that the normal supplementation regime for the 1650 horses surveyed in Victoria matched the trainers' supplementation regime.

Dr Derek Major

114 Dr Major is an equine veterinary consultant based in Agnes Banks, New South Wales.

115 He reviewed the feed and supplement regimes of the trainers, concluding that they contained multiple sources of cobalt and vitamin B12. While he considered that the estimated total daily intake was 4–6mg/day, the actual cobalt and vitamin B12 exposure may have been considerably higher. Vitamin B12 was a component of at least eight of the supplements used by the trainers.

116 He considered that there were explanations as to how the trainers exceeded the cobalt threshold in terms of individual biological variation, the normal distribution and their very heavy supplementation regime. Other factors might be long-term administration, stress of transport or racing, and dehydration.

117 Dr Major said that trainers typically removed water from horses the night before or about eight hours before the race. Some trainers fed right up to racing, while some withheld food from horses before a race. He was unaware of the practice adopted by the trainers or when the trainers fed and last gave water to the horses prior to the race.

118 Dr Major considered that the amount of cobalt written on the labels of supplements was the minimum added level. The likelihood of the actual level of cobalt in the supplement being lower was remote. The trainers were administering an atypically high amount of vitamin B12. The

administration program and the training program were a reasonable explanation for how the horses spiked up over the regulatory threshold.

119 Dr Major said that he was unaware of any administration trial where a horse had a urine cobalt concentration of 300µg/l more than 12 hours after cobalt was administered.

120 He agreed that all of Dr Paine's scenarios for administration of cobalt to the horses were available, but he considered that there may be other explanations.

121 Dr Major concluded that it was highly likely that the elevated cobalt levels were due to the feed and supplement program adopted by the trainers.

Emeritus Professor Colin Chapman

122 Professor Chapman is a former Dean of the Faculty of Pharmacy at Monash University. He has formerly lectured in pharmacokinetics, and conducts and supervises research into pharmacology, pharmacokinetics and drug detection.

123 Professor Chapman stated that it was possible for the long-term and legal use of cobalt containing nutritional supplements and injectable medicines to result in the accumulation of cobalt in parts of a horse's body. This could result in an unpredictable excretion process, including situations where the level of cobalt in pre-race samples could exceed the threshold of 200µg/l on occasions. He said it was possible to inadvertently exceed the declared threshold of 200µg/l for cobalt in race day urine samples.

124 Professor Chapman said that there were several different cobalt-containing feed supplements and medicines used by the trainers over long periods of time. It was likely that the amount of cobalt absorbed in the horses would have varied significantly over that time.

125 He considered that accumulation occurred in horses given that it took a considerable period of time for steady state to be achieved where the absorption and elimination of cobalt were in balance. Whenever cobalt containing feed supplements and injectables are given to horses which had already received cobalt containing products, there was likely to be both accumulation and excretion of additional cobalt.

126 Professor Chapman noted that excretion through the kidneys and filtration in the kidneys accounted for most drug excretion. He considered however, that urine was a poor indicator of the cobalt status of horses because there were factors that could influence the concentration of cobalt in urine, including fluid intake, dehydration, drugs, food, pH and gender.

127 He said it was difficult to determine if an amount exceeding 200µg/l in urine was the result of prolonged legal use of cobalt-containing supplements or injected medicines, the short-term use of these supplements, or the deliberate use of cobalt.

128 As to the LGC tests, Professor Chapman said that it was probable that the injection of vitamin B12 into a horse could trigger the excretion of significant amounts of organic cobalt (vitamin B12). It was probable that dumping of large amounts of vitamin B12 might occur after administration of additional vitamin B12 in horses which have sustained long-term administration of vitamin B12 supplements.

129 Dr Chapman was generally critical of the adoption of the 200µg/l standard by racing authorities, and of the scope of trials and tests, contending that something more stable, such as blood rather than urine should have been used.

130 He suggested that a wide variation in the urine concentration in horses was possible or probable, accepting, however, that he had no evidence of this. Dr Chapman was challenged at the Tribunal hearing about his frequent and almost interchangeable use of the words 'probable' and 'possible' in some of his answers to describe the same proposition.

131 Dr Chapman accepted that there was no study anywhere in the world that had ever resulted in a horse recording a cobalt concentration reading of over 300µg/l 24 hours or more after the last administration of cobalt. He said that there was no set of circumstances equivalent to what had happened here.

132 When asked about a statement that an injection of vitamin B12 would trigger the excretion of significant amounts of organic cobalt, he was unable to quantify, by way of estimate, what the term 'significant amounts' meant other than to say 'a lot' as against 'not much'.

133 He was unable to explain why so many of the trainers' horses recorded high cobalt urine concentrations, suggesting that it was multi-factorial.

134 He considered that the accumulation of cobalt in the tissues of horses after prolonged administration of supplements or other substances or the inappropriate administration of cobalt or cobalt-containing supplements on race day or one or two days beforehand could contribute to elevated cobalt concentrations in urine.

Did the supplement administration regimes cause the elevated concentration of cobalt?

135 I accept the evidence of RVL's and two of the trainers' expert witnesses and conclude that the administration spreadsheets and the trainers' evidence do not satisfactorily explain the high urine cobalt concentrations of each of the horses on race day.

136 The results are not consistent with the stated treatment regime for the following reasons:

(a) Dr Wainscott's clinical trial showed a half-life for the washout of cobalt in urine of 4.9 hours.

(b) Dr Vine noted, in substance, that the treatment regimes for the horses did not result in the measured urinary cobalt concentrations.

(c) Dr Stewart said that there was no study that supported the idea that normal supplementation could result in levels approaching or exceeding the race day urine threshold at 200µg/l, and that there was nothing exceptional in the supplement program of the trainers. There was nothing that could account for the 20 to 40-fold difference in race day urine cobalt levels.

(d) Dr Paine undertook an extensive analysis, identifying a number of scenarios of additional administration consistent with the urine sample test results.

(e) Professor Hibbert considered the race day results achieved to be highly improbable, given a regular diet and supplements.

(f) Mr Wenzel agreed that an administration study by the BHA of supplements to the effect that urinary cobalt levels return to below 200µg/l within 6.6 hours sounded reasonable.

(g) Dr Major said that he was unaware of any administration trial where a horse had a urine cobalt concentration of 300µg/l more than 12 hours after cobalt was administered. He agreed with all of Dr Paine's scenarios, but said there may be other explanations.

137 According to the evidence, there is no test that has ever been conducted in Australia or overseas where a urinary cobalt concentration of 300µg/l has been recorded over 24 hours after a cobalt administration.

ALTERNATIVE CAUSES

138 The primary case that the trainers have consistently put, is that no additional administration took place over and above that shown in the administration spreadsheets.

139 Save for what follows, they have not said at any stage or suggested in evidence, that they administered substances containing cobalt due to mistake, error, inadvertence, oversight, ignorance or carelessness. Nor has it been suggested or suspected that there has been third party intervention or 'nobbling'.

Is there any explanation for the high urinary cobalt concentrations found in each of the horses?

140 It is admitted that the trainers were in charge of and responsible for the horses at their stables, including each of *Windy Citi Bear*, *Best Suggestion* and *Choose*. They rely on their good record and reputation in the racing industry over many years.

141 They administered or were responsible for the administration of injectables and feed supplements. They say that the feed and supplements they administered were all purchased from reputable suppliers or veterinarians.

142 They have consistently denied any intent to affect the performance or behaviour of a horse at a race.

143 To explain the high test results, the trainers and their experts have advanced widely varying possible causes in the course of these proceedings. Some possible causes have been advanced and then abandoned or not pursued following further expert evidence.

144 Explanations for the high cobalt urine levels that have been advanced include:

(a) use of metal collection pans;

(b) differences in hydration levels, kidney function or the time of voiding; and

(c) possible effects of drugs, feed or gender.

145 Each of these possible causes have been debunked and criticised by RVL's expert witnesses. As RVL's witnesses have highlighted, there is no evidence to support the suggested cause. If the cause existed, it would have been captured or identified in the administration testing and large population surveys conducted in Australia and overseas. At the very least, a trend would have been observed.

146 There were two alternative causes which were pressed on behalf of the trainers. They were bioaccumulation and dumping; and possible variations in the cobalt content of the supplements admitted to be used.

147 I will now turn to the two alternative causes for the high cobalt test results for the horses advanced by the trainers.

Bioaccumulation and dumping

Dr Chapman

148 Professor Chapman expressed the opinion that cobalt accumulates in the body of a horse including the kidneys and liver when cobalt contained substances are administered to the horse over a period of time.

149 He said it took a considerable period of time for a balance to be achieved between the absorption and elimination. He suggested that it was possible that the intravenous injection of cobalt or vitamin B12 to horses two days before a race might trigger the excretion of significant amounts of vitamin B12 given that a lot of vitamin B12 can be found in the kidneys ('dumping').

150 He said that dumping might be triggered by a number of factors including stress or dehydration and that the timing of the cobalt release was not predictable.

151 Given the long term administration of cobalt supplements at the trainers' stables, Professor Chapman considered that the academic literature left

unanswered the situation where cobalt and vitamin B12 have been given in a chronic form for prolonged use.

152 Given the current state of the academic literature, the trainers submit that it is not possible to reject Professor Chapman's explanation of the accumulation and excretion of cobalt as a possible cause of the high test results for the horses.

Dr Major

153 Dr Major stated that cobalt accumulated in the red blood cells. He explained that the trainers' horse population was not a normal population as the supplementation program prior to December 2014 was excessive and irrational.

154 He observed that the total daily cobalt intake for each of the trainers' horses was 4–6 mg per day, which was around 12 times the accepted daily minimum requirements. He did not, however, suggest that dumping was supported by any evidence, or a likely explanation of what took place.

Dr Wainscott

155 As to bioaccumulation, Dr Wainscott observed the following:

(a) Various administration trials and population studies showed that normal urinary cobalt concentration levels are less than 10µg/l, and that both oral and injectable cobalt-containing supplements given at therapeutic doses had a rapid urinary clearance returning to baseline levels within 24 hours at administration. He pointed out that even after intensive intravenous cobalt administration, urinary cobalt levels returned to single digit baseline figures within 24 hours.

(b) A study of oral supplementation of cobalt-containing products, resulted in a peak concentration of 113µg/l and remained above 75µg/l for only 3.8 hours.

(c) The threshold level of 200µg/l left a considerable margin of safety. Consequently the test results for each of the horses was not consistent with the treatment regime in the administration spreadsheets.

(d) The BHA trial replicated the feed and medication regime of the trainers' horses using five horses over a period of almost three weeks. Dr Wainscott did not accept that there was any bioaccumulation over that period.

(e) Both an administration study that he had conducted and a study in Hong Kong showed cobalt levels returning to baseline levels within 24 hours of treatment. Although two of the products used by the trainers contained chelating agents used in aid of absorption of the product in the gut, chelating agents do not affect the half-life of cobalt in horses.

(f) He was not aware of any study or trial that establishes that accumulation over a period of time can result in a concentration at or even near 200ug/l 24 hours after administration.

Dr Brian Stewart

156 Dr Stewart made a number of important points about bioaccumulation and dumping. He considered that the trainers' declared cobalt supplementation was not especially high compared to the routine supplementation of Australian and international racehorses.

157 He explained that:

(a) The impact of routine supplementation on race day urinary cobalt levels was already accounted for in the population studies conducted by Harness Racing NSW, Racing Australia, the HKJC and the IFHA.

(b) A sample size of 1650 racehorses were tested in Victoria from April 2014 to May 2015 returning a mean race day cobalt of approximately 11.5ug/l. Additionally the trainers' declared supplementation regime was duplicated in the BHA trial, returning an elevated cobalt level no more than 10µg/l.

(c) The results of all administration trials to date rejected the view that bioaccumulation could be significant with respect to the 200µg/l threshold. Moreover, the idea that normal or reasonable racehorse cobalt supplementation could result in the elevation of urinary cobalt to levels approaching or exceeding the 200µg/l threshold was not supported by any administration trial or population.

(d) The BHA trial results show that spikes in cobalt concentration after intravenous administration of cobalt are short-lived returning to less than 20µg/l within 24 hours. The BHA trial and population surveys show that bioaccumulation manifests itself only to a small extent and not at a level significant to the 200µg/l race day threshold.

(e) The published studies and the BHA trial all show a rapid fall in urine cobalt after supplementation. The initial elimination half-life of cobalt was found to be 2–6.4 hours in one study and 0.7–8.6 hours in another, and was characterised by rapid initial clearance of cobalt during which most cobalt leaves the body.

(f) As to dumping, there was no scientific evidence of a sudden dumping phenomenon occurring in horses. It was very difficult to imagine that the quantity of cobalt dumped into the bloodstream after stress or exercise could be significant in terms of the 200µg/l threshold in urine.

(g) As to the suggestion that the horses might have unique characteristics that make them susceptible to breaching the threshold or to bioaccumulation, there was nothing that made him believe that the trainers' population was so exceptional from the general

population as to account for their elevated race day urine cobalt levels. Many horses are trained at country training centres and travel comparable distances to racecourses. The vast majority of Victorian horses receive cobalt supplementation at levels not dissimilar to that of the trainers.

(h) As to suggested flaws in the administration trials and population surveys done to the number of horses, type of horses, and trial duration, there was nothing to suggest that the pharmacokinetics of cobalt varies significantly among horses – rather the evidence pointed to the opposite conclusion. Moreover, the results of international race day surveys appear to be very consistent with studies in Australia showing there is no significant variation in the pharmacokinetics of horses which may have led to the trainers horses accumulating cobalt.

(i) As to the suggestion that the BHA trial was not conducted for a long enough period to demonstrate bioaccumulation, he was of the opinion that the trial was sufficiently long to demonstrate trends that would indicate bioaccumulation that could be significant in terms of the 200ug/l threshold.

(j) The HKJC survey at the RAD Board of 7642 samples collected over eight years from 2006 of horses in Hong Kong were supplemented with injected and oral cobalt as in Australia. Many Hong Kong horses were continuously maintained on this regime for periods of up to 4–5 years. The trials had shown that normal supplementation did not cause bioaccumulation, or even a trend in bioaccumulation that was significant with respect to a race day threshold of 200µg/l. The HKJC race day urine cobalt information was directly relevant to the Australian situation in assessing whether prolonged supplementation led to bioaccumulation in racehorses. The race day threshold already accounted for any bioaccumulation that might occur as a result of normal feeding regimes.

(k) The suggestion that elevated race day thresholds might be caused by variations in dosage based or errors, differences in body weight, or trainers' tendency to 'give a little bit more' in the lead up to a race should be rejected.

(l) This suggestion was not credible as the BHA trial showed that oral supplementation only increased urine cobalt levels to approximately 10µg/l; there was no evidence that commercial supplements cause significant bioaccumulation or give rise to grossly elevated urine cobalt levels. A legitimate cobalt injection product administered according to the manufacturer's recommendations could only produce a level above 200µg/l if administered on race day.

(m) Finally, if a horse's tissue storage sites are saturated as a result of sufficient bioaccumulation, further cobalt administration leads to a

higher level of excretion of cobalt. Given that the trainers' level of disclosed supplementation was not especially high compared to the rest of Australian and international horses, he would expect to see in the trainers' horses a very small degree of bioaccumulation.

Dr Paine

158 Dr Paine was of the view that the overwhelming evidence shows no significant accumulation of cobalt in the urine pharmacokinetics of horses on a daily supplement regime.

159 He observed that:

(a) Various administration trials and population studies showed that after intravenous administration, cobalt urine concentrations dropped below 200µg/l within six hours of an administration. For oral administration, peak urine concentrations were significantly lower.

(b) The BHA trial showed that the peak cobalt urine concentration reached with the trainers' disclosed supplementation regime was approximately 8µg/l. Within 24 hours of multiple intravenous administration of cobalt, the trainers' supplementation regime reached urine concentrations of approximately 10µg/l.

(c) There was no reason to suppose that the horses were any different from the normal horse population. The trainers considered that the horses were fit to race. They had not noticed anything remarkable about them. Dr Paine disagreed that the long-term component of cobalt retention increases with the size of the animal.

(d) Studies in respect of cobalt in urine showed that there was an absorption phase followed by two further phases – a rapid half-life of a matter of hours and then a long terminal half-life of about 100 hours. Steady state and saturation are not the same thing. Steady state can be reached without having a toxic effect. If a horse ever got to the point where the tissues were saturated with cobalt, there would be serious toxicological effects.

(e) He did not accept that significant dumping of cobalt can occur into a pre-race urine sample taken from a horse with a high level of cobalt. There was no evidence that stress can trigger a reaction in the horse's body such as dumping or an excretion of cobalt or vitamin B12. Dumping would involve a cobalt build-up and an unusually large removal in the urine. There was no evidence of unusual or extreme dumping of cobalt or vitamin B12 in the studies that have been carried out.

(f) The overwhelming evidence showed no significant accumulation of cobalt in the urine pharmacokinetics of horses receiving daily doses of cobalt supplements.

Professor Hibbert

160 Professor Hibbert rejected the bioaccumulation argument. He pointed to published studies that showed for a horse to reach urinary race day cobalt concentrations greater than 200µg/l, cobalt must have been administered in high dose on the day prior to racing or in a lower dose on race day.

161 Professor Hibbert came to the following conclusions:

(a) The administration spreadsheet for *Windy Citi Bear* shows no great difference in the amounts of cobalt administered before the 5 June race when the urine cobalt concentration was 6µg/l and the 25 June race when the result was 290µg/l. Accordingly, cobalt in addition to the declared administration been was administered within a period of approximately 24 hours before the sample was taken on 25 June.

(b) The administration spreadsheet for *Best Suggestion* shows no great difference in the amounts of cobalt administered before the 15 June race when the result was 9µg/l, and the 5 July race when the result was 510µg/l, or the 12 July race when the result was 160µg/l and the 23 July race when the result was 66µg/l. The result of 9µg/l was near the middle of the regular range of values. Cobalt in addition to the declared administration was administered within the 24 hours before the sample was taken on each of the July race days.

(c) For the case of *Choose,* cobalt in addition to the declared administration was administered within a period of approximately 24 hours before the sample was taken on 28 September 2014 in order to get to the high value of 450µg/l measured on that day.

Conclusion as to bioaccumulation and dumping

162 RVL's expert witnesses all rejected the dumping hypothesis as a credible or possible explanation for the high cobalt concentrations recorded by the horses.

163 I find the evidence given by RVL's expert witnesses to be compelling, and based on evidence obtained through studies and population surveys.

164 By contrast, the evidence of the trainers given by Professor Chapman on dumping following bioaccumulation is unsupported, or very largely unsupported by findings or studies or surveys in Australia or overseas. I reject Professor Chapman's hypothesis that the high urinary cobalt concentrations measured in each of the horses following pre-race testing is, or may be attributable to cobalt dumping following cobalt saturation of the tissues.

165 I base my view on the reasons given by the RVL experts, and for the following reasons:

(a) there is no evidence to suggest that the effect of bioaccumulation on horses is significant or even identified as a trend in any study in the world;

(b) there is no evidence to suggest that there is anything special or unusual about the capacities, fitness or health of any of the three horses;

(c) if the horses were doped with cobalt to the degree that their tissues were saturated with cobalt, signs or symptoms of toxicity would be expected;

(d) it is not obvious what would trigger the dumping to occur, or when it would occur. The positive tests were all undertaken pre-race and the horses had not been subjected to the stress of racing. They had been transported for about two hours in a transport but so they had on other occasions, and so had horses from country training centres all over Victoria. It is not apparent that this caused the three horses to dump cobalt on these but not on other occasions, or explain why other horses from the trainers' stables recorded much lower cobalt readings after similar transportation;

(e) all studies and population surveys show that a horse's kidneys quickly and efficiently discharge excess cobalt in urine. After a period of 24 hours, the urinary cobalt concentration approached a normal level, and is well under the limit of 200µg/l. A high urinary cobalt concentration is consistent with recent administration of cobalt so that the horse has not had the time to discharge the excess cobalt;

(f) there has been no explanation as to why the urinary cobalt concentration for *Windy Citi Bear, Best Suggestion* and *Choose* can be low on one race day consistently with other horses, yet high on another race day, if the administration of cobalt-containing supplements is in accordance with the program described on the administration spreadsheets;

(g) *Windy Citi Bear, Best Suggestion* and *Choose* were not the only trainers' stable horses that returned high cobalt readings over the period from April to November 2014. So did *Vivi Veloce* (170µg/l on 5 April 2014); *Best Suggestion* (160µg/l on 12 July 2014); *Aces and Angels* (170µg/l on 26 July 2014), *Pittsburgh Flyer* (150µg/l on 6 September 2014); *Sabatini* (190µg/l on 13 September 2014 and 150µg/l on 28 September 2014) and *Fenway* (200µg/l on 1 November 2014). *Fenway's* urinary cobalt level of 200µg/l was markedly higher than the 42µg/l recorded less than 3 weeks earlier. This suggests a consistent practice in the stables of administering high doses of cobalt salts or vitamin B12 on or close to race day;

(h) the trainers are unable to explain why there is such a large spread of cobalt readings over the period from April to October 2014. Once Dr Roberts' guidance was received in November 2014 and cobalt supplementation ended, the problem ceased. Subsequent to December 2014, all levels of cobalt recorded in the trainers' stables

have been normal with all but one reading at or below 9µg/l. This suggests that it was the administration of cobalt supplements by the trainers that caused the high readings; and

(i) Professor Chapman's manner and answers to questions was unpersuasive and left a lot to be desired for an expert witness. He appeared to use important words in the field of causation such as 'probable' or 'possible' as virtually interchangeable and without regard for their significance. He was reluctant to acknowledge that he was advancing a theory or hypothesis that was not founded in research, tests or an experiment, or supported by the many other studies that have been conducted in Australia, and overseas including in the United States, United Kingdom or Hong Kong.

166 Having considered all of the evidence on bioaccumulation and dumping, I accept the evidence of RVL's expert witnesses and reject the expert evidence on behalf of the trainers insofar as it is inconsistent.

Variation in cobalt content of the supplements used

167 It was suggested by Dr Major that the levels of cobalt in feed can differ significantly from the levels indicated on the label of the product. He gave an example of a product where this has occurred. In cross-examination, he said that he had done some testing across a range of feed products. However, he did not provide the results of his testing in his report or evidence.

168 Dr Paine accepted that products can be mislabelled and the quantity of cobalt contained in a product may be greater than indicated on the label.

169 There is, however, no evidence of mislabelling or of incorrect quantities in any of the supplements used by the trainers' stables. None of the supplements used were suspected of error, retained by them or tested. There is nothing to suggest that there was any inaccuracy.

170 Moreover, even the possible existence of inaccuracy in contents labelling does not assist. Even if the amount of cobalt administered was significantly higher than the label indicated, and assuming that the administration spreadsheets are accurate, the urinary cobalt concentration would be little different when measured pre-race having regard to the length of time that would have elapsed between the administration and the time of the test.

171 A variation in feed content does not account for the high readings actually measured, or the fact that the measured results were low on some days and high on others, where the same administration regime prevailed.

172 There is no basis in evidence or scientific validation for the suggestion that a variation in the cobalt content in the supplements or feed is or could be an explanation for the high readings. In short, there is no explanation for the high readings recorded by some horses on race days, and regular results by those and other horses on other days.

Conclusion as to administration

173 I accept RVL's evidence and submissions that none of the suggested alternative causes listed above is supported by evidence or amounts to anything more than a speculation, unsupported by evidence or expert opinion. I find that none of the explanations set out above are credible or probative. None of them cast any doubt on the test results.

174 For the reasons given, I am satisfied on the balance of probabilities to a comfortable level of satisfaction, that the high urinary cobalt concentrations for each of the horses was caused by the administration of cobalt-containing substances by or on behalf of the trainers, additional to the supplements and medications set out in the administration spreadsheets.

175 I am satisfied on the balance of probabilities to a comfortable level of satisfaction, that administration of the additional cobalt-containing substances occurred either intravenously or orally or both. The administration of the additional cobalt-containing substances most likely occurred on the morning of race days, although it may have occurred in whole or part in considerably greater quantities the afternoon or evening before race day. The trainers are responsible for what took place.

The time of administration

176 Race day administration of cobalt-containing supplements or substances, whether intravenous or through feed or both, is the most probable explanation for the high test results for *Windy Citi Bear, Best Suggestion* and *Choose.*

177 *Windy Citi Bear* was sampled at 1.14pm returning a high test result of 290µg/l. *Best Suggestion* and *Choose* were sampled one and a half hours earlier at 11.45am and 11.54am, and returned very high test results of 510µg/l and 450µg/l respectively. For such high results to be achieved, it is most likely that cobalt-containing substances were administered on race day morning, as the studies of the half-life of cobalt administered to horses show.

178 Given the expert evidence on cobalt half-life, the dose of cobalt administered to a horse the day prior to race day would need to be very large for a horse still to have very high urine test results close to or after noon on the following day. There is no apparent reason why a trainer or person seeking to administer a substance intended to benefit the horse would do so in the middle of the night.

179 I accept the evidence of RVL's experts that the most probable cause of the high readings of each of the horses is injectable or oral administration of cobalt-containing substances on race day.

180 While race day administration of cobalt-containing substances by or on behalf of the trainers is the probable reason for the high cobalt test results, it is still possible, although unlikely, that one or more large doses of cobalt-

containing substances were administered overnight or in the course of the afternoon of the day preceding race day.

THE PURPOSE OF ADMINISTRATION

Did the trainers have the purpose of affecting the performance or behaviour of a horse in a race?

181 I accept that the reason why the trainers administered cobalt-containing substances to the horses on race day or the afternoon or evening of the preceding day was to benefit the performance or behaviour of the horses in their races.

182 There is no other conceivable reason why the trainers would administer substances on race day itself or the day before. I do not accept that the reason for the unrecorded administration of substances containing cobalt was merely to boost their recovery from racing.

183 The doses of cobalt administered were substantial, particularly if administered prior to transportation, and they gave rise to the high urine cobalt concentrations.

184 In the present case, there is a direct and immediate temporal and causal connection between the administration of the cobalt-containing substances and the performance or behaviour of each of the horses in a race.

Shannon Hope

185 I am satisfied that Shannon Hope, who had charge of the horses stabled at Seymour, was well aware that he was administering or causing the administration of substances that he should not be administering.

186 At the RAD Board, Shannon Hope's evidence in answer to questions from his own Senior Counsel was false. He stated and elaborated on false answers. Later, he admitted telling untruths.

187 Shannon Hope's dissimulation on the important subject of his knowledge and awareness of the Rules of Racing about cobalt, and the steps taken within his own stables to ensure compliance with the restrictions on the use of cobalt-containing supplements and medications as early as April 2014 and prior to the high test results achieved by trainers' stable horses over the period from June to November 2014, leaves his credit open to grave doubt.

188 There is good reason to believe that, when he later said to the stewards that race day administration of supplements and medications was a 'no-go zone', he was also engaged in dissimulation.

189 The administration of cobalt-containing substances was surreptitious, and was kept secret. It is not recorded in the register which the trainers were required to maintain of medications administered to each horse. It was not disclosed on administration spreadsheets. It was not disclosed to the stewards. It has not been disclosed in evidence.

190 In my view, there is a likely reason for the non-disclosure. That is because the race day administration of medications is prohibited under the Rules of Racing with a minimum of six months licence disqualification. Any disclosure of the administration of medication to a racehorse on race day without the stewards' permission would attract such a penalty.

Lee Hope

191 Lee Hope has always denied that any additional administration occurred over and above the administration spreadsheets. Lee Hope and his son Shannon Hope worked hand in hand on a daily basis from the early hours of the morning. They frequently discussed the training and performance of each of the horses in their stable. They also agreed on the supplements and medications that were to be administered to their horses.

192 I am satisfied that Lee Hope was well aware what Shannon Hope was doing or arranging in terms of the administration of supplements and medications on race day or close to race day.

193 Lee Hope did not give evidence that he was unaware of Shannon Hope's activities, or that at any time he indicated his disapproval of what he was doing in administering supplements and medications to horses. The stable practices in relation to supplementation and medication were long established, and had continued for many years.

194 Given the strength and closeness of the father-son bond over a long time, I do not accept that Shannon Hope concealed what he was doing in relation to the administration of supplements and medications from his father. Lee Hope did not suggest that he did.

195 I am satisfied on the balance of probabilities to a comfortable level of satisfaction that Lee Hope was aware what was happening within the stable, and took no step to stop or prevent unrecorded administrations of cobalt-containing supplements or medications.

CONCLUSION

196 For the reasons given, I am satisfied on the balance of probabilities to a comfortable level of satisfaction that:

(a) the trainers administered or caused to be administered prohibited substances for the purpose of affecting the performance and behaviour of each of the horses *Windy Citi Bear, Best Suggestion* and *Choose* on the days alleged;

(b) this was done by the administration of cobalt-containing substances to each horse on race day or shortly prior to race day; and

(c) both trainers were well aware of the unrecorded administration of additional cobalt supplements or medications and intended administration to occur.

197 The Tribunal finds them guilty of offences against AR 175(h)(i) in relation to each of the horses as charged by RVL.

Justice Greg Garde AO RFD
Acting Judicial Member