



# **GUIDELINES FOR CLASSIFICATION OF PROHIBITED SUBSTANCES**

## **CLASSIFICATION OF PROHIBITED SUBSTANCES IN SPECIMENS COLLECTED ON RACE DAY (PRE- AND POST-RACE)**

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### **Preamble**

This classification document is intended as a guideline to assist in understanding the severity and implications of alleged prohibited substance (drug) offences and to serve as a guide in respect of the associated penalty. In this regard there is a Prohibited Substance List provided, with a classification for each substance in relation to the severity of such a finding, with additional sections in clarification of specific prohibited substances.

It is important to stress that other aspects (than classification) can significantly contribute to the severity of the offence and the associated penalty. These include the route of administration of the drug preparation, illegal sourcing of this preparation, the intent to manipulate the race result, risk to the rider, the welfare of the horse, a prohibited practice which could be involved, evidence that the substance(s) may have been used improperly and previous offences. During such investigation (formal inquiry) there may be an investigation into aspects surrounding the administration of a drug to the horse as well as the veterinary and pharmacological aspects of the finding. It is important to note that for a particular substance, different findings may present very different facts and aspects to consider. There may also be mitigating circumstances which must be investigated and considered. These could affect the outcome of the inquiry and the penalty, irrespective of the particular substance and the associated classification.

### **The Prohibited Substance List provides for a range of substances administered to racehorses**

- Included are locally registered veterinary preparations and local human preparations which registered veterinarians may use as an off-label application when deemed necessary. The practice of off-label use (in a manner not exactly indicated on the product label) of locally registered human preparations in the veterinary (equine) field is allowed. This is in contrast to the illegal use of preparations which are not registered or not licensed locally.
- Compounded veterinary pharmaceuticals are preparations which are specially manufactured on prescription in compounding pharmacies to create a particular product for a particular need. The preparation is often a close copy of an existing or discontinued product. Such products can legitimately be used on horses as indicated, when it is formally prescribed for a specific horse.



- There are a variety of prohibited substance containing preparations which are readily available in shops and pharmacy shop-fronts. These are often not scheduled or have a schedule which does not require a prescription.
- The list is not an exhaustive list of substances which are prohibited substances on which positive findings can be declared. Any substance not included in this list that forms part of a local registered preparation, will be classified according to its drug grouping.
- Drugs that are illegally sourced, that have a pronounced effect on the horse and which are clearly not intended for use in the horse are placed in higher classes. This particularly if these might affect the performance of the horse and the outcome of a race. Such findings may be forwarded to the relevant veterinary, medication control and law enforcement bodies and authorities for further investigation.
- Where a particular substance is found to be a feed or environmental contaminant, the specific pharmacological classification of the substance may be of less relevance than the issue of the contamination.

### **The class (classification) ranking of substances**

The ranking of the substances (shown in the Prohibited Substance List) within the indicated classes is based on aspects such as the pharmacological effect, the considered ability to influence the outcome of a race and whether or not these have a legitimate therapeutic use in the racehorse. Drugs clearly intended for use in equine therapeutics and those unlikely to affect race performance occupy lower classes. Many of the substances / drugs have numerous effects and side effects and this has to be considered within the classification. This substance classification will be reviewed on a regular basis and new substances will be added or removed when deemed appropriate.

### **The pro-drugs and the metabolites of substances**

Note that the list of substances does not include all the metabolites of all the listed prohibited substances covered by the listed drug groupings. Some of the listed substances are precursors of prohibited substances (pro-drugs which are often steroid esters) and these are also considered prohibited substances. Where both a substance and its metabolite(s) are reported (or similarly both a substance and its pro-drugs), these are considered singular findings. Such metabolites and pro-drugs are classified corresponding to the prohibited substance.

### **Screening limits, Residue limits and International Thresholds**

International Screening Limits (ISLs) are International Federation of Horseracing Authorities (IFHA) agreed and formalized urine or plasma concentration prosecution action levels which apply to a limited list of specified therapeutic (legitimate horse treatment) prohibited substances. There are some such similar therapeutic prohibited substance action levels which are decided on by the Asian Racing Federation and these are called Asian Screening Limits (ASLs).



Similarly there are IFHA action levels to control certain substances which are contaminants and environmental substances (residues) which could be present in the feed of the horse or its environment, which are called International Residue Limits (IRLs). For a given substance there is sometimes not both urine and plasma SL's but only one of the two. This is because SL's are only formalized once there is enough data to support the SL (within the International Federation of Horseracing Authorities / Asian Racing Federation). Typically there is more such trial data available from horse urine than from horse plasma. Additional international research is constantly being conducted and additional screening limits are expected to be added to the existing lists over time. The NHA is a signatory to selected International SLs.

- The current list of SL's and also RL's which are adopted by the NHA is shown on the NHA website (Laboratory section).

International (IFHA) Thresholds are in place for substances which could be endogenous to the horse, substances arising from plants traditionally grazed or harvested as equine feed or substances in equine feed arising from contamination during cultivation, processing or treatment, storage, or transportation. Many of these substances are to some level present in all horses.

- The current list of Thresholds which are adopted by the NHA is shown on the NHA website (Laboratory section).

With International Thresholds the prosecution of substances requires the quantification of the substance in the relevant specimen to obtain an accurate quantity, which is reported to exceed the threshold value.

This is in contrast to substances with ISLs, ASLs and IRLs. With the prosecution of substances with such limits there is only the requirement that the laboratory has evidence that these limits are being exceeded in the relevant specimen.

### **Therapeutic substance detection times**

- A Detection Time Guideline for Therapeutic Substances document is published on the NHA website (Laboratory section).

This therapeutic substance guidance is an attempt to assist veterinarians involved in equine veterinary practice. The intention is to help ensure the best possible treatment for particular conditions experienced by racehorses.

The "Detection Times" are presented for some of the more commonly used therapeutic substances in equine medicine. The detection times within the document correspond to the International SL's adopted by the NHA for the control of therapeutic substances.



## **Non-local preparations, drugs and other substances**

Preparations, drugs and substances (which are prohibited) not included in this list and those which are not registered for use in this country will be considered Class 1 violations unless information is presented to justify reclassification.

## **The availability of drug preparations without prescription in shops and pharmacy shop-fronts**

There are a variety of prohibited substance containing preparations that are readily available in retail shops. These are often not scheduled at all or have only a S1 or S2 medication schedule which do not require a prescription. These most frequently contain anti-inflammatory (pain treatment) drugs and are often bandages, patches, gels, ointments, liniments or tablets.

These are discussed in the following sections of this document:

- V. Notes on easily accessible preparations in shops (without prescription)
- VI. Notes on over the counter and shop front anti-inflammatory drugs (without prescription)
- VII. Notes on Tetrahydrocannabinol (THC), Cannabidiol and Cannabidiolic acid originating from Cannabis plants

## **Vitamin B12 preparations containing cobalt**

Part of the vitamin B12 molecule is the element cobalt, which is defined as a prohibited substance. This implies that the timing of the administration of this vitamin, and the dose administered, needs to be considered in relation to the timing of racing. Vitamin B12 and other sources of cobalt (such as supplements, tonics and fortified feeds) are discussed in a separate section of this document:

- XIV. Notes on Cobalt (contained in Vitamin B12 and supplements)

## **Beta-2 agonist drugs**

Beta-2 agonists which form part of legitimate veterinary preparation require special discussion. These are Forbidden Substances (Class 1) as these are "Anabolic agents". Two of these substances (clenbuterol and salbutamol) however also form part of legitimate veterinary treatments if these are formally prescribed and issued for the treatment of a particular (veterinarian diagnosed) horse. These two substances and their classification are discussed in separate sections:

- I. Notes on Clenbuterol
- II. Notes on Salbutamol (as contained in inhalers)

If a horse specimen is confirmed to contain one of these substances and there is no veterinary prescription in place for this horse then this finding will be considered Class 1. In contrast, if a veterinary diagnosis, prescription and correctly labeled medication is in place for this specific horse, then the inquiry may consider to prosecute this as a finding of a class less severe than Class 1.



### **Preparations containing multiple drug (prohibited) substances**

It must be noted that some preparations contain several prohibited substances (such as Buscopan which contains both N-butylscopolamine and dipyrrone). If a withdrawal period is considered for such preparations then the period of detection of the most long-lasting substances in this medication must be considered.

Care must for example be taken with the administration of combination preparations such as procaine penicillin. While the penicillin is an antibiotic and not a prohibited substance, the procaine is a prohibited substance while contained in this long-acting formulation. Procaine penicillin is discussed in the separate section:

- III. Notes on Procaine (as contained in procaine penicillin)

### **Bisphosphonates**

Bisphosphonates are prohibited drug substances which may find application in the treatment of bone density loss. There is the allowance that the local veterinary bisphosphonate drug Tiludronic acid may however be administered to the racehorse under specific conditions under the care of a veterinarian, as discussed in the separate section:

- XII. Notes and conditions on the use of Tiludronic acid (a bisphosphonate).

### **Notes on substances which can elevate the total Carbon Dioxide level of the blood**

It will be noted that while Carbon Dioxide is a natural substance, there is an international Threshold value for total Carbon Dioxide exceeding which a prohibited substance finding is declared. The administration of products and preparations which contain bicarbonate could have the result of increasing the total Carbon Dioxide level of the blood, and could result in this Threshold being exceeded. This is discussed in the section:

- X. Notes on substances that elevate the total Carbon Dioxide level of the blood

### **Forbidden Substances**

These are substances considered by the International Federation of Horseracing Authorities to be "prohibited substances which are not to be administered to racehorses at any time during their racing career". These are Class 1 substances.

- The current guidance to NHA Forbidden Substances is provided within the Rules of the NHA (Appendix M).

### **Exempted Substances**

The classification does not include those substances which would seem not to affect the performance of the horse. This includes substances or drugs such as antibiotics / antimicrobials (correctly prescribed and administered, with the exception of procaine penicillin), anti-parasitic anti-viral medication and anti-fungal medication approved and registered for use in horses. Also anti-ulcer medication, registered vaccines against infectious agents in horses, glucosamine and



chondroitin sulphate and locally registered oestrus suppressant medications in the female horse (these are prohibited substances when detected in a gelding or a male horse).

- These substances are defined and listed as “Exempted Substances” within the Rules of the NHA (Appendix N).

With these substances being exempted it is confirmed that these antibiotics, antimicrobials, anti-parasitic anti-viral medication and anti-fungal drugs and substances are not prohibited substances.

### **Authorized Race Day Substances**

These substances / preparations may be administered to the horse on race day. None of the substances are prohibited substances.

- These substances are listed in the Rules of the NHA, Appendix O.

## **CLASSIFICATION OF PROHIBITED SUBSTANCES IN SPECIMENS COLLECTED OUT OF COMPETITION**

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The classification and penalties associated with Class 1 and Class 2 and Forbidden Substances apply equally during out of competition and on race day.

For therapeutic substances in Classes 3, 4 and 5 which are prosecuted to be present during out of competition testing (or exceeding an International Threshold) the guide is a penalty of 20% either side of the lowest scale on the table of the penalties corresponding to race day findings.

Note however that for out of competition specimens the guidelines for prohibited substances in classes 3, 4 and 5 do not apply to those therapeutic substances which may be prescribed and supplied to the horse by a veterinarian to treat a diagnosed condition or illness.

Where such a therapeutic substance (which is also a prohibited substance) is confirmed in an out of competition specimen from the horse, and such a substance was prescribed and supplied by a veterinarian in the treatment of a condition or illness, it is not a positive finding if there is a record and if this is correctly recorded in the Veterinary Treatment Register (VTR) for this horse.

Where such a therapeutic substance (which is also a prohibited substance) is confirmed in an out of competition specimen from the horse and such a substance was not prescribed and not supplied by the veterinarian in the treatment of a condition or illness, or in the absence of a record of this or not correctly recorded and detailed in the Veterinary Treatment Register for this horse, it is an offence which will be prosecuted for.



The offence is not directly related to the finding of a prohibited substance (classes 3, 4 and 5) but is related to the absence of the prescribed procedure and records of when this horse was treated with this prohibited substance.

Prohibited substances can be contained within preparations and products which can be legally sourced and administered by a non-veterinarian (such as a trainer) within the out of competition period. Discussion of this can be found in the following sections of this document:

- V. Notes on easily accessible preparations in shops (without prescription)
- VI. Notes on over-the-counter and shop-front anti-inflammatory drugs substances (without prescription)
- VII. Notes on Tetrahydrocannabinol (THC), Cannabidiol and Cannabidiolic acid originating from Cannabis plants

The administration of such preparations and products to the racehorse must be detailed in the relevant Veterinary Treatment Register.

*Note that there are specific veterinary requirements relating to:*

- *the period of prescription*
- *the labelling of medication, including with horse name and with the VTR page number*
- *the prescription expiry date and the expiry date of such medication*
- *chronic medication prescription and VTR entry*
- *the renewing of chronic medication prescription*
- *the legibility of writing within Veterinary Treatment Registers and on medication labels*
- *the fact that the prescriptions and medications are specific to the particular horse*

*It could be an offence not to follow the prescribed procedure (the absence of such).*

*The above is provided in more detail in the documents:*

- *Completion of the Veterinary Treatment Register which is available on the NHA website (Equine Welfare and Veterinary section).*
- *Protocol for the use of Furosemide in Training which is available on the NHA website (Equine Welfare and Veterinary section).*

Note that preparations and products which contain the substances arsenic, cobalt, dimethyl sulphoxide (DMSO) and salicylic acid precursors must be recorded in the relevant veterinary treatment register. This applies even though these are not necessarily scheduled medications which can only be prescribed and supplied by a veterinarian (some of these can be sourced and administered by a trainer). There is the same requirement to record substances which could elevate plasma carbon dioxide, hydrocortisone, methoxytyramine within out of competition in the racehorse. To record all of the above administrations is important as these could elevate concentrations to exceed the relevant International Thresholds in out of competition testing (OOCT) collected specimens. Findings of the above substances at a concentration exceeding the



thresholds may not be actionable if legitimate treatments are appropriately recorded in the relevant Veterinary Treatment Register. This is discussed in the sections

- This document section XI. Notes on the out of competition administration of arsenic, cobalt, dimethyl sulphoxide (DMSO), prednisolone and salicylic acid and substances which could elevate plasma total carbon dioxide, hydrocortisone and methoxytyramine
- The document Completion of the Veterinary Treatment Register is shown on the NHA website (Equine Welfare and Veterinary section).

Note that there is a stand down period (period during which the administered horse may not be raced) following the intra-articular administration of corticosteroid drugs to the racehorse. This is detailed in NHA Rule 72.1.46... *It will be an offence to race a horse within 7 days (the days calculated inclusively from the date of treatment) after the administration of any intra-articular corticosteroid treatment to this horse.*





## **CLASSIFICATION OF PROHIBITED SUBSTANCES**

### **Class 1: Substances which have no place in horseracing, including illegal or Forbidden Substances.**

Included are substances forbidden in racing (including Forbidden Substances) such as anabolic and androgenic steroids and ester preparations thereof. Also included are schedule 7 and 8 substances as determined by the South African Health Products Regulatory Authority {SAHPRA}, substances which are illegally sourced, human recreational drugs of abuse, insulin and Forbidden Substances as detailed in the Rules of the NHA (Appendix M) and which is inclusive of growth promoters, growth hormones, erythropoietins, synthetic haemoglobin oxygen carriers, snake venoms and ethanol.

### **Class 2: Substances which have an obvious effect on the performance of the horse.**

These substances will affect the performance of the horse. Substances include central nervous system depressants and stimulants (excluding caffeine), barbiturates, cardiovascular system depressants and stimulants, psychoactive and psychotropic drugs and neuromuscular blocking agents. Also included are local anaesthetics (excluding procaine), narcotic analgesics, natural and synthetic opioids, opiate agonists, opioid agonist-antagonists, ACTH (adrenocorticotrophic hormone) and progesterones / oestrogens (if administered to the male horse).

### **Class 3: Substances which have the potential to affect the performance of the horse with the potential to be abused.**

Drugs that may or may not have a generally accepted medical use in the racehorse, but pharmacologically have less potential to affect performance than drugs in Class 2. Substances include sedatives, antihypertensives, antihypotensives, cardiac glycosides, antiarrhythmic agents, respiratory stimulants, tranquillizers, benzodiazepines and caffeine.

### **Class 4: Substances which have a generally accepted veterinary (therapeutic) use in the racehorse but which have the potential to affect performance.**

Classes include corticosteroids, non-steroidal anti-inflammatory drugs (NSAIDs), diuretics, bronchodilators, skeletal muscle relaxants, non-narcotic analgesics, antipyretics and procaine.

### **Class 5: Substances which have an accepted veterinary use in horses but which may have performance modifying ability.**

Examples include anti gout medications, expectorants, antitussives, anti-diarrhoeals, anti-allergic drugs, antihistamines, anti-coagulants, haemostatics, antispasmodics and choleric digestives.



## PROHIBITED SUBSTANCE LIST

This list is inclusive of the local veterinary and human substances considered most important in treatment or of particular concern within horseracing in South Africa. This is not an exhaustive list.

| <b>Prohibited Substance</b><br>(or metabolite or pro-drug) | <b>Class</b>    |
|--|-----------------|
| <b>A</b>   |                 |
| Acebutolol   | 3               |
| Acepromazine   | 3               |
| Acetazolamide  | 4               |
| Acetaminophen (Paracetamol)                                | 4 V             |
| Acetylsalicylic acid (Aspirin)                             | 4XI/XVII/V/VIII |
| ACTH human synthetic<br>(Adrenocorticotrophic hormone)     | 2 XIII          |
| Adrenaline   | 2               |
| Adrenocorticotrophic hormone<br>(ACTH human synthetic)     | 2 XIII          |
| Albuterol (Salbutamol)                                     | 1 II/XVII       |
| Albuterol (Salbutamol)<br>(valid veterinary prescription)  | 4 II/XVII       |
| Alcohol (Ethanol)  | 1               |
| Alfaxalone   | 2               |
| Alfentanil   | 2               |
| Allopurinol  | 3               |
| Alprazolam   | 3               |
| Altrenogest (in the male horse)                            | 2               |
| Ambroxol   | 5               |
| Amiloride  | 4               |
| Aminophylline  | 4               |
| Amitriptylline   | 2               |
| Arsenic  | 3 XI/XVII       |
| Aspirin (Acetylsalicylic acid)                             | 4 VIII/V/XVII   |
| Atenolol   | 3               |
| Atropine   | 5               |
| Azaperone (Azapropazone)                                   | 3               |
| <b>B</b>   |                 |
| Baclofen   | 4               |
| Beclomethasone   | 4               |
| Benazepril   | 3               |
| Betamethasone  | 4               |
| Bisoprolol   | 3               |
| Bromazepam   | 3               |
| Bromhexine   | 5               |

|  |                 |
|--|-----------------|
| Brotizolam                                     | 3               |
| Budesonide                                     | 4               |
| Buflomedil                                     | 3               |
| Bupivacaine                                    | 2               |
| Buprenorphine                                  | 2               |
| Buspiron                                       | 2               |
| Butorphanol                                    | 2               |
| <b>C</b>                                       |                 |
| Caffeine                                       | 3               |
| Cannabidiol (CBD)                              | 4 VII/V         |
| Cannabidiolic acid (CBDA)                      | 4 VII/V         |
| Capsaicin                                      | 4               |
| Captopril                                      | 3               |
| Carbocysteine                                  | 5               |
| Carboxy THC (THC-COOH)                         | 4 VII/V         |
| Carbon dioxide (total)                         | 2 X/XI/XVII     |
| Carprofen                                      | 4               |
| Carvedilol                                     | 3               |
| Cathine (Norpseudoephedrine)                   | 2               |
| Celecoxib                                      | 4               |
| Cetirizine                                     | 5               |
| Chlorpheniramine                               | 5               |
| Chlorpromazine                                 | 3               |
| Chlorthalidone                                 | 4               |
| Cinnarizine                                    | 5               |
| Citalopram                                     | 3               |
| Clanobutin                                     | 5               |
| Clenbuterol                                    | 1 I/XVII        |
| Clenbuterol<br>(valid veterinary prescription) | 4 I/XVII        |
| Clidinium                                      | 5               |
| Clobetasol                                     | 4               |
| Clobetasol propionate                          | 4               |
| Clomipramine                                   | 2               |
| Clonazepam                                     | 3               |
| Clonidine                                      | 3               |
| Codeine  | 2               |
| Cobalt   | 3XIV/VI/XI/XVII |
| Cortisone                                      | 4               |



| <b>D</b>                                 |            |
|--|------------|
| Dantrolene                               | 4          |
| Dembrexine                               | 5          |
| Detomidine                               | 3          |
| Dexamethasone                            | 4          |
| Dextromethorphan                         | 5          |
| Dextropropoxyphene                       | 2          |
| Diamorphine (Heroin)                     | 1          |
| Diazepam                                 | 3          |
| Diclofenac                               | 4 VI/XVII  |
| Digoxin                                  | 3          |
| Diethyl amine salicylate                 | 4 VIII/VII |
| Dihydrocodeine                           | 2          |
| Dimethyl Sulphoxide (DMSO)               | 4 XI/XVII  |
| Diphenhydramine                          | 5          |
| Diphenylpyraline                         | 5          |
| Diprenorphine                            | 2          |
| Dipyron (Metamizole)                     | 4          |
| DMSO (Dimethyl Sulphoxide)               | 4 XI       |
| Dopamine                                 | 3          |
| Doxapram                                 | 3          |
| <b>E</b>                                 |            |
| Enalapril (Enalaprilat)                  | 3          |
| Enalaprilat (Enalapril)                  | 3          |
| Ephedrine                                | 4          |
| Epinephrine                              | 2          |
| Erythropoietin (EPO)                     | 1 XIII     |
| Ethanol                                  | 1          |
| Ethinyl Estradiol<br>(in the male horse) | 2          |
| Ethylestrenol (in the male horse)        | 2          |
| Etofilline                               | 4          |
| Etoricoxib                               | 4          |
| Etorphine                                | 2          |
| <b>F</b>                                 |            |
| Fenoterol                                | 4          |
| Fentanyl                                 | 2          |
| Firocoxib                                | 4          |
| Flavoxate                                | 5          |
| Fludrocortisone                          | 4          |
| Fluticasone propionate                   | 4          |
| Flumethasone (Flumetasone)               | 4 IV       |
| Flunitrazepam                            | 3          |
| Flunixin                                 | 4          |
| Fluocinolone                             | 4          |

| Fluoxetine  | 2           |
|---|-------------|
| Fluphenazine  | 2           |
| Flurazepam  | 3           |
| Flurbiprofen  | 4 VI/XVII   |
| Fluticasone   | 4           |
| Formoterol  | 4           |
| Furosemide  | 4 XVII /XVI |
| <b>G</b>  |             |
| Gabapentin  | 2           |
| Glycopyrrolate                                      | 4           |
| Growth Hormone (GH)                                 | 1 XIII      |
| Guaifenesin   | 5           |
| <b>H</b>  |             |
| Haloperidol   | 3           |
| Haemoglobin glutamers                               | 1           |
| Haemoglobin oxygen carrier                          | 1           |
| Heroin (Diamorphine)                                | 1           |
| Hydrochlorthiazide<br>(Hydrochlorothiazide)         | 4           |
| Hydrocodone   | 2           |
| Hydrocortisone                                      | 4 XI        |
| Hydrocortisone hemisuccinate                        | 4 XI        |
| Hydroxyprogesterone caproate<br>(in the male horse) | 2           |
| Hydroxyprogesterone<br>(in the male horse)          | 2           |
| Hydroxyzine   | 3           |
| Hyoscine (Scopolamine)                              | 5           |
| Hyoscine-N-butylscopolamine                         | 5           |
| <b>I</b>  |             |
| Ibuprofen   | 4 v         |
| Imipramine  | 2           |
| Indapamide  | 4           |
| Indomethacin  | 4           |
| Insulin   | 1           |
| Ipratropium   | 4           |
| Irbesartan  | 3           |
| Isoxsuprine   | 4           |
| <b>K</b>  |             |
| Ketamine  | 2           |
| Ketoprofen  | 4 VI/XVII   |
| Ketorolac   | 4           |



| <b>L</b>   |             |
|--|-------------|
| Labetalol  | 3           |
| Lamotrigine  | 3           |
| Levodopa   | 3           |
| Levonorgestrol                                     | 2           |
| Lidocaine (Lignocaine)                             | 2           |
| Lisinopril   | 4           |
| Loperamide   | 5           |
| Loratidine   | 5           |
| Lorazepam  | 3           |
| Lormetazepam                                       | 3           |
| Lornoxicam   | 4           |
| Losartan   | 3           |
| <b>M</b>   |             |
| Medetomidine                                       | 3           |
| Medroxyprogesterone<br>(in the male horse)         | 2           |
| Medroxyprogesterone acetate<br>(in the male horse) | 2           |
| Mefenamic acid                                     | 4           |
| Meloxicam  | 4           |
| Meperidine (Pethidine)                             | 2           |
| Mepyramine maleate                                 | 5           |
| Mephenesin   | 4           |
| Mepivacaine  | 2           |
| Meprobromate (Meprobamate)                         | 3           |
| Methocarbamol                                      | 4 IX        |
| Methyl salicylate                                  | 4 XI/VIII/V |
| Methyldopa   | 3           |
| Methylphenidate                                    | 2           |
| Methylprednisolone                                 | 4           |
| Metoclopramide                                     | 5           |
| Metoprolol   | 3           |
| Midazolam  | 3           |
| Minoxidil  | 3           |
| Mometasone furoate                                 | 4           |
| Morphine   | 2           |
| <b>N</b>   |             |
| N-Acetylcysteine                                   | 5           |
| Nalbuphine   | 2           |
| Naloxone   | 2           |
| Naltrexone   | 2           |
| Nandrolone (Nortestosterone)                       | 1           |
| Naproxen   | 4           |
| N-butylscopolamine                                 | 5           |

| N-butyl-Scopolamine            | 5     |
|--------------------------------|-------|
| Neostigmine                    | 5     |
| Nifedipine                     | 3     |
| Nitrazepam                     | 3     |
| Nitroglycerine                 | 2     |
| Norpseudoephedrine (Cathine)   | 5     |
| Nortestosterone (Nandrolone)   | 1     |
| <b>O</b>                       |       |
| Oestradiol                     | 2     |
| Oxazepam                       | 3     |
| Oxybutynin                     | 5     |
| Oxycodone                      | 2     |
| Oxymorphone                    | 2     |
| Oxyphenbutazone                | 1     |
| <b>P</b>                       |       |
| Paracetamol (Acetaminophen)    | 4 V   |
| Parecoxib                      | 4     |
| Paroxetine                     | 2     |
| Pemoline                       | 2     |
| Pentobarbital                  | 2     |
| Pergolide                      | 3     |
| Pethidine (Meperidine)         | 2     |
| Phenazone                      | 4     |
| Pheniramine                    | 5     |
| Phenobarbital (Phenobarbitone) | 2     |
| Phenylbutazone                 | 1     |
| Phenylpropanolamine            | 3     |
| Piretanide                     | 4     |
| Piroxicam                      | 4     |
| Prazepam                       | 3     |
| Prednisolone                   | 4 XI  |
| Prednisolone hemisuccinate     | 4 XI  |
| Prednisone                     | 4     |
| Prilocaine                     | 2     |
| Probenecid                     | 5     |
| Procaine                       | 4 III |
| Prochlorperazine               | 3     |
| Progesterone                   | 2     |
| Propafenone                    | 3     |
| Propantheline (Propanthelline) | 5     |
| Propofol                       | 2     |
| Propranolol                    | 3     |
| Pseudoephedrine                | 3     |
| Pyrilamine maleate             | 5     |



| <b>R</b>                                      |                    |
|---|--------------------|
| Ractopamine                                   | 1                  |
| Ramifenazone (Isopyrin)                       | 4                  |
| Reserpine                                     | 3                  |
| Risperidone                                   | 2                  |
| Robenacoxib                                   | 4                  |
| Rofecoxib                                     | 4                  |
| Romifidine                                    | 3                  |
| Ropivacaine                                   | 2                  |
| <b>S</b>                                      |                    |
| Salbutamol (Albuterol)                        | 1 II/XVII          |
| Salbutamol<br>(valid veterinary prescription) | 4 II/XVII          |
| Salicylic acid                                | 4VI/XI/VIII/V/XVII |
| Salmeterol                                    | 4                  |
| Scopolamine (Hyoscine)                        | 4                  |
| Scopolamine N-Butyl                           | 5                  |
| Sertraline                                    | 3                  |
| Sibutramine                                   | 3                  |
| Sildenafil                                    | 3                  |
| Somatropin                                    | 1                  |
| Sotalol                                       | 3                  |
| Spirinolactone                                | 3                  |
| Succinyl choline                              | 3                  |
| Sufentanil                                    | 2                  |
| Sumatriptan                                   | 4                  |
| Synephrine                                    | 3                  |
| <b>T</b>                                      |                    |
| Temazepam                                     | 3                  |
| Terbutaline                                   | 4                  |
| Testosterone                                  | 1                  |
| Testosterone cypionate                        | 1                  |
| Testosterone undecanoate                      | 1                  |
| THC & THC-COOH                                | 4 VII/V            |
| Tetrahydrocannabinol                          | 4 VII/V            |

| Tetracaine                         | 2            |
|------------------------------------|--------------|
| Tetramisole                        | 5            |
| Theobromine                        | 4            |
| Theophylline                       | 4            |
| Thiafentanyl                       | 2            |
| Tiletamine                         | 2            |
| Tilidine                           | 2            |
| Timolol                            | 3            |
| Torseamide                         | 4            |
| Total carbon dioxide (TCO2)        | 2 X/XI/XVII  |
| Tramadol                           | 2            |
| Tranexamic acid                    | 5            |
| Trenbolone                         | 1            |
| Trenbolone acetate                 | 1            |
| Triamcinolone                      | 4            |
| Triamcinolone acetonide            | 4            |
| Triazolam                          | 3            |
| Trimipramine                       | 2            |
| Tiludronic acid                    | 3 XII/XVII   |
| <b>UVWXY</b>                       |              |
| Valerenic acid                     | 4            |
| Valsartan                          | 3            |
| Vedaprofen                         | 4            |
| Venlafaxine                        | 2            |
| Verapamil                          | 3            |
| Vitamin B12<br>(Cobalt containing) | 3 XIV/V/XVII |
| Warfarin                           | 5            |
| Xylazine                           | 3            |
| Yohimbine                          | 5            |
| <b>Z</b>                           |              |
| Zeranol                            | 1            |
| Zilpaterol                         | 1 XV         |
| Zolmitriptan                       | 4            |
| Zolpidem                           | 2            |
| Zopiclone                          | 3            |
| Zolazepam                          | 3            |

Note that the above list is not comprehensive of all the substances being screened (or the substance which are prohibited) at the NHA Laboratory



**References within the PROHIBITED SUBSTANCE LIST below will now be discussed in the sections to follow:**

- I... Notes on Clenbuterol
- II... Notes on Salbutamol (as contained in inhalers)
- III... Notes on Procaine (as contained in procaine penicillin)
- IV... Notes on Flumethasone administered by injection
- V... Notes on easily accessible preparations in shops (without prescription)
- VI... Notes on over-the-counter and shop-front anti-inflammatory drugs (without prescription)
- VII... Notes on Tetrahydrocannabinol (THC), Cannabidiol and Cannabidiolic acid originating from Cannabis plants
- VIII... Notes on Salicylic acid and its precursors
- IX... Notes on Methocarbamol
- X... Notes on substances that could elevate the total Carbon Dioxide level of the blood
- XI... Notes on the out of competition administration of substances
- XII... Notes and conditions on the use of Tiludronic acid (a bisphosphonate)
- XIII... Notes on protein and peptide prohibited and forbidden substances
- XIV... Notes on Cobalt (as contained in Vitamin B12 and supplements)
- XV... Notes on Zilpaterol
- XVI... Refer to the Protocol for the use of Furosemide in Training which is available on the NHA website (Equine Welfare and Veterinary section).
- XVII... Refer to the Completion of the Veterinary Treatment Register which is available on the NHA website (Equine Welfare and Veterinary section).

## **I... Notes on Clenbuterol**

Clenbuterol is a therapeutic substance found in local veterinary products for oral and also injectable administration. As a bronchodilator with action to "reduce reversible airway obstruction" it is primarily prescribed for horses which suffer from Chronic Obstructive Pulmonary Disease (COPD) and Inflammatory Airway Disease (IAD). This condition described as "difficulty to breathe, often progressively getting worse" is quite prevalent in South Africa due to sometimes dusty stable environments and local climatic conditions. Clenbuterol is frequently prescribed to racehorses as part of a treatment regimen extending over several days.

Internationally the IFHA has assigned Clenbuterol as an "anabolic agent" with a classification corresponding to the NHA guidance of "Class 1" and it being a "Forbidden Substance". This



classification applies to the substance type "beta-2 agonists", which includes Clenbuterol. This IFHA "Class 1" classification applies "unless the substance is prescribed by a veterinarian as a bronchodilator". The reference to its anabolic effects is as a result of studies indicating that it increases muscle mass and protein synthesis.

When a positive finding of Clenbuterol is declared in the racehorse it is important for Inquiry Boards to consider the circumstances surrounding this positive and which classification is to be applied.

To be considered are the following aspects:

- The Clenbuterol preparation "Ventipulmin" is a powder which is administered orally and will often be stored in the feed room. The possibility therefore exists that this could end up in the feed of another horse.
- Clenbuterol treatment is often a treatment regime over several days (for example 7 days or more).
- The elimination of multiple doses of Clenbuterol from a horse can be detected for at least 6 days.

Inquiry boards which adjudicate on positive findings for Clenbuterol must therefore be mindful that if there is any another horse in the particular stable yard which has been correctly prescribed and recorded Clenbuterol, then there must be consideration to have the offence re-classified not being Class, 1 but less severe.

## **II... Notes on Salbutamol (as contained in inhalers)**

Human asthma has a high prevalence and inhalers which contain salbutamol, budesonide, fenoterol, terbutaline, salmeterol, ipratopium or fluticasone are commercially available for the treatment of such conditions. Several brands of such inhalers contain salbutamol and these are sold as Schedule 2 (S2) medication. S2 medication does not require a prescription. S2 medication is available at the pharmacy counter if the personal details of the patient are supplied.

It has been observed such salbutamol preparations are purchased by non-veterinarians and are administered to racehorses by means of "equine inhaler masks". Such administration could be for conditions such as Chronic Obstructive Pulmonary Disease (COPD) and Inflammatory Airway Disease (IAD). It must be noted that salbutamol is a beta-2 agonist which is classified as a Forbidden Substance (classification Class 1) in the rules of the NHA, in line with international policy from the IFHA. The relevant section of the rules of the NHA states "Forbidden Substance unless the substance is prescribed by a veterinarian as a bronchodilator at the appropriate dose and is reflected in the treatment record of the horse".

As a Class 1 substance a finding of salbutamol in the racehorse is associated with high penalty and a ban from horseracing for a 6-month period. It is therefore important to note that salbutamol use, even in the form of an inhaler which is readily available from a pharmacy, must be prescribed by a veterinarian. It must be specified for the treatment of a particular horse. The preparation must be labelled according to the requirements of the NHA and the horse name and the treatment regimen must be completed in a relevant Veterinary Treatment Register.



### **III... Notes on Procaine (as contained in procaine penicillin)**

Procaine positives are most likely associated with the administration of procaine penicillin and this has been taken into consideration in the placement of procaine into Class 4 instead of Class 2 with other local anesthetics, unless evidence suggests a Class 2 contravention.

### **IV... Notes on Flumethasone administered by injection**

Flumethasone is a therapeutic substance which forms part of locally available veterinary injectable preparations. It is prescribed and administered to the racehorse for injury associated pain and inflammation. Within international literature and NHA literature there is no publication of a detection time in the racehorse for this prohibited substance. The NHA laboratory conducts screening and confirmation for the presence of this substance in both urine and blood (plasma) to international guidance, at a level which is considered to have an effect on the horse.

- ✓ Flumethasone intravenous (IV) administration  
Notification is provided that following an intravenous (IV) administration of a typical therapeutic dose of Flumethasone to a racehorse, a detection period of a least 48 hours must be considered. A period of withdrawal which is longer than this period must be applied to prevent a level of Flumethasone which would result in a positive finding for this substance in either urine or blood (plasma).
- ✓ Flumethasone intra-articular (IA) administration  
Rule 72.1.46 of the NHA specifies that it is a prohibited practice and a contravention to "race a horse within 7 days, calculated inclusively from the date of treatment, after the administration of any intra-articular corticosteroid treatment". This rule applies for intra-articular treatment with the corticosteroid Flumethasone.

### **V... Notes on easily accessible preparations in shops (without prescription)**

- ✓ **Aspirin (Acetylsalicylic acid) containing preparations**  
Many commercial human medications (including tablets and pills) contains acetyl salicylic acid (which is precursor of salicylic acid). Salicylic acid is a substance found in nature and in equine feed. There is an international threshold value for salicylic acid exceeding which a prohibited substance finding is declared. Refer to the section below for more information.  
This is discussed in more detail a separate section of this document:
  - Notes on Salicylic acid and its precursors





✓ **Liniments, rubs and other preparations containing salicylic acid**

Preparations which contain salicylic acid, acetyl salicylic acid, diethylamine salicylate and methylsalicylate are precursors of salicylic acid. There is an international threshold value for salicylic acid in both plasma and urine, exceeding which a prohibited substance finding is declared.

Medication and preparation labels must be checked if these contain any of the above salicylic acid precursors. These could include powders, liquids and topically applied ointments and gels. Commercial preparations include Salsprin (injectable), Sloan's Heat Rub cream, Reparil Gel, IceVet, Thermo Rub, Rigly Horse Liniment; Deep Heat Rub, Equiline Liniment Liquid, Oil of Wintergreen, Sprain Liniment Gel; Vet Balm; Sebbaderm shampoo, Vetsence Otiderm and Sodium Salicyl (this is not an exhaustive list). This is discussed in more detail in a separate section of this document:

- Notes on Salicylic acid and its precursors

✓ **Paracetamol containing preparations**

Paracetamol is a prohibited substance in racing. Such preparations are found in shop fronts without a prescription being required. These are typically tablets or syrups.

✓ **Ibuprofen containing preparations**

Ibuprofen is a prohibited substance in racing. Such preparations are found in shop fronts without a prescription being required. These are typically tablets or syrups.

✓ **Vitamin B12**

The element cobalt is an integral part of vitamin B12. The administration of vitamin B12 has the effect of increasing the natural plasma and urine level of cobalt in both urine and plasma. There is an international threshold value for cobalt in both plasma and urine, exceeding which a prohibited substance finding is declared. Well-known cobalt containing products for horses include Red Cell, Hemo-15, V.A.M. injection, Kyro B + Liver, Kyrovital, Kyrophos Metabolic, Catasol, Intravit, Biosol, Iron Power, Hemopar, Itamaster, Hemostam, Ultra-Fer 300 and Total Control. This is not an exhaustive list. Cobalt is discussed in more detail a separate section of this document:

- Notes on cobalt (as contained Vitamin B12 and supplements)

✓ **Cannabis derived products, oils and isolates**

Many pharmacies and health shops now sell Cannabis (dagga and hemp) plant originating products. The substances Tetrahydrocannabinol (THC), Cannabidiol (CBD) and Cannabidiolic acid (CBDA) which could be contained in such products could result in positive finding in racehorses.

This is discussed in more detail a separate section of this document:

- Notes on Tetrahydrocannabinol (THC), Cannabidiol and Cannabidiolic acid originating from Cannabis plants



## **VI... Notes on over-the-counter and shop-front anti-inflammatory drugs (without prescription)**

Non-steroidal anti-inflammatory drugs (NSAID's) are pharmaceutical substances which are prescribed for the treatment of muscle and joint injury, pain, swelling and inflammation. These can be found in tablets, capsules and injections. These are most often obtained by medical prescription or when dispensed by a pharmacist. These non-steroidal anti-inflammatory drugs can however also be obtained in certain products which do not have a pharmaceutical schedule and are sold in shops and pharmacies without a prescription. The use of such preparations in racehorses can result in positive findings for these prohibited substances. These preparations are normally liniments or bandage packs, with a few examples listed below (this is not a comprehensive list):

- Voltaren Emulgel containing diclofenac
- Fastum containing ketoprofen
- Transact containing flurbiprofen
- Deep Heat and Reparil Gel which are sources of salicylic acid

It is important to adhere to suitable withdrawal periods when using such preparations in horses.

## **VII... Notes on Tetrahydrocannabinol (THC), Cannabidiol and Cannabidiolic acid originating from Cannabis plants**

Natural or herbal substances or remedies and/or drugs which have antipyretic, analgesic and anti-inflammatory properties are prohibited in racing (NHA Rule 73.4.2.1). Two such natural anti-inflammatory substances are Cannabidiol (CBD) and Cannabidiolic acid (CBDA), found in many Cannabis plant species, including cannabis (dagga) and hemp plants. Note that medicinal oils, ointment and creams which originate from these plants could contain elevated levels of these substances. Furthermore, oil preparations of pure Cannabidiol which have been isolated from plants are now available.

Tetrahydrocannabinol (THC) is one of the principal psychoactive constituents found in many Cannabis species plants. It is a prohibited substance in racing and its administration typically results in positive finding(s) of its metabolite(s), such as 11-nor-delta 9 tetrahydrocannabinol-9-carboxylic acid (carboxy-THC).

It is cautioned that the use of Cannabis preparations and the use of horse bedding which has hemp plant as a component (which horses may be able to ingest) could result in the above or other prohibited substance positive findings in racehorses.



## **VIII... Notes on Salicylic acid and its precursors**

Salicylic acid is a substance found in the normal feed of horses such as lucerne and hay. During previous years large populations of racehorses from all over the world were screened for natural levels of salicylic acid which is ingested in such feeds. Considering the possible diets of horses and worst-case scenarios, a single salicylic prosecution threshold was decided on an international basis. This IFHA threshold has been established with an extremely high probability that untreated horses on a variety of feeds will present levels far below this salicylic acid threshold. The NHA has formally adopted this threshold: "Salicylic acid..... 6.5 micrograms salicylic acid per millilitre in plasma" as shown on the NHA website. A specimen is only declared a positive finding when the concentration of salicylic acid is accurately confirmed (full quantitative analysis is conducted as part of such a positive finding) to exceed this threshold, in accordance to Rule 73.4.4.

It is known that Aspirin can be added to the feed of horses to acts as an analgesic and anti-inflammatory substance. Acetyl salicylic acid (Aspirin) is however a pro-drug of salicylic acid, implying that Aspirin will be converted to salicylic acid within the horse. As Aspirin it is not a scheduled substance (in contrast to most analgesic and anti-inflammatory substances) it can readily be obtained. The administration of Aspirin to the racehorse must be recorded in the Veterinary Treatment Register of the horse. The use of Aspirin too close to race day is likely to result in salicylic acid prosecution. Be aware that guidance on the use of Aspirin products in the horse differ between different manufacturers.

Following the administration of a single dose of Aspirin to a racehorse a detection period of two days applies (this is not a withdrawal time). Consult your veterinarian in regards to a suitable withdrawal period.

## **IX... Notes on Methocarbamol**

Methocarbamol is a muscle relaxant used to treat skeletal muscle spasms, with some effect on the central nervous system. One of its actions is to block nerve impulses (such as pain sensations) to the brain. Methocarbamol is locally available as a human tablet preparation of commercial name "Robaxin". It has therapeutic application in the horse and is used for the treatment of acute inflammatory and traumatic conditions of the skeletal muscle to reduce muscle spasm and effect muscle relaxation.

Methocarbamol is a substance with an Asian Racing Federation screening limit and as member of this federation, the NHA has adopted this limit. This screening limit of 100 ng/ml in urine applies to: "Methocarbamol (restricted to single oral or IV treatment of no more than 5 grams)"

Within this guidance above it is clearly stated that it applies only to a single administration. The reason for this is that multiple doses of this substance have been reported to result in an accumulation of methocarbamol. This is non-predictable between different horses. This



accumulation implies that multiple doses have an excretion time which is much longer than that of a single dose.

In oral studies there has been evidence of recycling during some trials. Recycling is when the preparation remains present in stable areas after administration (for example spilling, dripping or spitting by the horse), or when the substance is excreted in the urine and faeces and re-enters the horse. Such recycling can be reduced if the stable is frequently and thoroughly cleaned. It must be considered that Methocarbamol it is not highly soluble in cold water. Recycling can be non-predictable between horses and within different stable environments.

It is recommended that Methocarbamol only be used as single dose treatment to the racehorse, with a detection time of about 48 hours (two days). With a detection time of two days a withdrawal time period significantly longer than this must apply. In addition to this statement and guidance is the fact that a withdrawal period of several weeks must be applied when multiple doses are administered as part of a treatment regimen.

### **X... Notes on substances that can elevate the total Carbon Dioxide level of the blood**

The administration of products and preparations which contain bicarbonate has the result of increasing the total Carbon Dioxide level of the blood. There is an international threshold value for Total Carbon Dioxide exceeding which a prohibited substance finding is declared.

Note that total Carbon Dioxide levels can also be elevated by means of alkalinisation agents. These could be buffers, drenches and drips and can include alkalinizing agents such as bicarbonates, citrates, succinates, acetates, propionates, maleates, lactates, trometamol, tris buffer or trometamine (this is not an exhaustive list). Included in the list are products described as urinary alkalinisers and "hind gut buffers".

### **I... Notes on the out of competition administration of arsenic, cobalt, dimethyl sulphoxide (DMSO), prednisolone and salicylic acid and substances which could elevate plasma total carbon dioxide, hydrocortisone and methoxytyramine**

Note that the out of competition use of preparations and products which contain the substances arsenic, cobalt (vitamin B12), dimethyl sulphoxide (DMSO), hydrocortisone, prednisolone and salicylic acid must be recorded in the relevant veterinary treatment register even though these are not all scheduled medications which may only be prescribed and supplied by a veterinarian (some of these can be sourced and administered by a trainer).



There is the same requirement to record substances which could elevate plasma carbon dioxide, hydrocortisone and methoxytyramine in the racehorse out of competition testing and elevate such levels in out of competition testing collected specimen.

These treatments will not be actionable if a legitimate treatment is appropriately recorded in the relevant Veterinary Treatment Register.

## **XII... Notes and conditions on the use of Tiludronic acid (a bisphosphonate)**

Bisphosphonates is a class of drug which prevents the loss of bone density in the racehorse. These substances are prohibited substances within the Rules of the NHA: "73.4.1 Substances capable at any time of causing an action or effect, or both an action and effect ... 73.4.1.6 the musculoskeletal system".

There is now an allowance for older racehorses to be treated for osteoporosis (that results in low bone density bones which are brittle and could break).

The formal International Federation of Horseracing Authorities (IFHA) statement within Article 6 of the International Agreement on Breeding, Racing and Wagering is:

*Any bisphosphonate is not to be administered to a racehorse:*

- *under the age of three years and six months as determined by its recorded date of birth; and*
- *on the day of the race or on any of the 30 days before the day of the race in which the horse is declared to run.*

*The bisphosphonate product administered must be licensed for use in horses in the country in which it is being used, and be administered in accordance with the label instructions.*

*There must be a diagnosis determined by a veterinary surgeon that supports the use of a bisphosphonate as an appropriate treatment, and such treatment must be administered by a veterinary surgeon.*

There is the requirement that:

- Only local registered horse-approved drug substances are used.
- There is only one such licensed for use in horses in South Africa, called Tildren which contains Tiludronic acid (also known as Tiludronate). Other, locally available human preparations and non-licensed and non-registered products and other bisphosphonates may not be used.
- That the horse must be an older horse (not still a growing horse).
- The racehorses must be 3.5 years old at least (the age when osteoporosis may become problematic).



- There must be control by means of a veterinarian and a formal treatment regimen from a veterinarian (according to the recommendations for the specific product).
- The younger racehorses (below the age of 3.5 years) may not receive this treatment (as osteoporosis treatment should not be required).
- It is specified that the use of such medication must be prescribed and controlled by a veterinarian and that such treatment must be well-detailed by the veterinarian in the VTR of the corresponding horse and trainer.

It must be noted that:

- a positive finding will result when it is detected in a racehorse younger than 3.5 years.
- that a positive finding will result if it is detected in a racehorse older than 3.5 years - if an official, corresponding diagnosis and prescription is not in place.
- that a positive finding will result if it is detected on a race day in a racehorse older than 3.5 years - if a 30-day withdrawal period was not complied with.
- There must be an official diagnosis determined by a veterinary surgeon that supports the use of a bisphosphonate (Tildren) as an appropriate treatment.
- Tildren must administered in accordance with the product label instructions.
- Tildren treatments must be administered by a veterinary surgeon.

### **XIII... Notes on protein and peptide prohibited and forbidden substances**

Most conventional medications contain drug substances which are small chemical molecules. Many of these can affect the horse and hundreds of these are routinely screened for by the NHA Laboratory. Many of the newer generation substances which are prohibited and which are of concern are peptides and proteins similar to those found naturally in the horse. This Laboratory is actively involved in a program to extend the screening of racing and out of competition specimens for an increasing number of peptide and protein substances which can affect the horse. These are the future drugs of concern, most of these substances are classified as Class 1, Forbidden Substances within the Rules of the NHA.

#### ***Erythropoietin (EPO)***

Erythropoietin is a naturally occurring protein hormone which has the function to increase red blood cell production in the horse. Natural EPO can be supplemented by the administration of several different forms of human EPO to the horse. At the NHA Laboratory the screening of human EPO in horse specimens is being undertaken employing a sophisticated immuno-detection screening methodology which is widely reported as the most accurate and sensitive currently available to the racing industry. A highly attractive aspect about this is the wide range of EPO types which are covered, as has been confirmed by EPO administration and research studies at racing laboratories. Included in the effective coverage of the screen are conventional EPO forms



such as Epogen, Eprex, Epoetin-alpha, Epoetin-beta and Procrit and even longer acting EPO types called darbepoetin alfa (Aranesp, DPO) and CERA (PEG Epoetin-beta, MirCERA).

### ***Growth Hormone (GH)***

Growth Hormone refers to a natural hormone within the horse which is anabolic and which has the effect to enhance cell growth and cell recovery. In addition to this naturally occurring equine GH there are a range of synthetic GH's from several animal species which are active in the horse. These include a modified form of equine GH, bovine (cattle) GH and porcine (pig) GH. The NHA Laboratory employs a sensitive immune-detection screening approach which was shown effective in detecting the use these hormones by means of the measurement of the amount of the messenger protein "IGF-1". The screening methodology measures the IGF-1 concentration against the level which is normal in the horse and can also detect the use of and some IGF-1 analogues and synthetic IGF-1 forms. The NHA Laboratory was a few years ago, in partnership with a few other countries, instrumental in conducting important research into suitable screening methodologies and validating these screening approaches.

### ***Adrenocorticotrophic hormone (ACTH)***

Adrenocorticotrophic hormone is a protein hormone naturally produced in the horse. The function of ACTH is to stimulate and also regulate levels of the steroid hormone cortisol. Commercially available ACTH is a synthetically produced peptide hormone which is high similar in structure to ACTH produced naturally. As a prohibited substance in horseracing the use of synthetic ACTH is most commonly monitored and prosecuted by the increase which is observed the level of naturally produced hydrocortisone. As the hydrocortisone level increases beyond the international threshold, this is prosecuted as a prohibited substance offence.

There are also other approaches to detect the use of synthetic ACTH. One of these is based on the fact that synthetic ACTH corresponds to the structure of human ACTH. It can therefore be detected in the horse as the structure of this protein is somewhat different to naturally produced ACTH in the horse. The NHA Laboratory is one of a few racing laboratories that has been active in the research of new approaches for the detection of synthetic administered ACTH in the racehorse. During recent years ACTH administration trials were conducted on horses as part of such research at the NHA Laboratory. This research was formally presented at an international conference for horse racing chemists and veterinarians (ICRAV).

It must be noted that at least one web-based sales company is selling a product which purports to contain the biochemically active molecule of ACTH. Several racing laboratories have already analysed this preparation. Such analysis however indicated that the active peptide ACTH is either not contained or is only contained in a very low concentration, certainly too low to affect the horse.

The NHA is well-aware of the threat which these peptide and protein based Class 1, Forbidden Substances pose to the integrity of racing and the welfare of the horse and for this reason these screening methods have been in place at the NHA for many years.



## **XIV... Notes on Cobalt (as contained in Vitamin B12 and supplements)**

Cobalt is naturally found in all mammal bodies and animal feed and is considered an essential dietary trace element and micronutrient. Cobalt deficiency is not observed in horses in the wild and the normal diet of horses in combination with the usual prescribed vitamin supplementation should supply the horse with sufficient cobalt for its well-being and health. Cobalt is classed as a 'heavy metal' and is a structural component of vitamin B12 (cobalamin). This vitamin is involved in the normal functioning of the brain and nervous system and in the final stages of red blood cell formation and maturation. All of cobalt's potential physiological effects in the horse have not yet been determined; however, high doses can present severe toxic effects and can be detrimental to the health of the horse.

Evidence suggests that cobalt preparations are/were being used inappropriately in racehorses in some racing jurisdictions. As cobalt is naturally present in equine biological samples such as blood and urine, it was decided that the introduction of an international threshold for cobalt is necessary to facilitate the control of misuse in racehorses.

Trainers are advised that the International Federation of Horseracing Authorities (IFHA) has set international thresholds in horse urine and in horse plasma. The NHA, as a signatory country of the IFHA, has adopted these thresholds in its rules. This decision was made following a survey which showed that natural levels of cobalt in racehorses within South Africa correspond to those observed in other countries and that the threshold can be applied to the local population.

A large range of registered oral and injectable veterinary supplements which contain vitamin B12 (Cobalamin) or cobalt salts are available for use in the horse. The administration of any of these could give rise to an elevation of total cobalt levels in blood and urine. There is not a listing of commercial preparations which contain cobalt as it will be difficult to keep the list complete. Be aware of the amount of cobalt provided to the horse (also from dietary sources) and follow the guidance of the NHA for the withdrawal of products which contain significant amounts of cobalt.

Note that many feeds contain relatively high levels of cobalt. Feeds with 0.4 mg cobalt/kg feed or higher are considered fortified feeds. The use of such fortified feeds increase cobalt concentration but have not been shown to result in cobalt levels which would exceed the urine threshold. Note that the use of such feeds would eliminate the need for any other cobalt supplementation in the horse.

It is recommended that supplemental cobalt from any source, including registered cobalt containing supplements and vitamin B12 (cobalamin), not be administered to the horse within at least two full days prior to race day. Higher doses than those indicated by the product and also repeated administrations may require longer elimination periods. Note that reliance on and use of this guidance does not absolve or diminish a trainer or owner from being responsible for





ensuring that the horse complies with the rules relating to the presence of drugs and prohibited substances when presenting a horse.

## ***International Federation of Horseracing Authorities Advisory Document:***

### ***Cobalt, additional information***

International thresholds for cobalt in plasma and urine are published in Section 16 of Article 6A of the International Agreement on Breeding, Racing and Wagering as 0.1 microgram total cobalt per millilitre in urine and 0.025 microgram total cobalt (free and protein bound) per millilitre in plasma. In order to provide international consistency regarding the use of cobalt containing supplements, National Racing Authorities may wish to advise the following:

1. The threshold levels were determined following an international survey of cobalt concentrations in racehorses on race days.
2. A normal racing diet is more than sufficient to meet a horse's nutritional requirements for cobalt and vitamin B12; neither cases of cobalt deficiency nor disease for which cobalt is the indicated treatment have been documented in the horse.
3. From evidence to date, as a guide, no more than 1 mg of cobalt from a single dose should be given by injection and no more than 5 mg by mouth within the day preceding race day. Local Rules regarding administration of Prohibited Substances in the period leading up to and including race day must be noted.
4. Injectable cobalt supplements offer no nutritional advantages because incorporation of cobalt into the vitamin B12 molecule occurs within the horse's gut.
5. Trainers should consult with their veterinarians to ensure that their oral supplementation regimen provides only the amount of cobalt necessary to meet the scientifically established nutritional requirements of the horse for cobalt. The safest strategy is the selection of supplements with low amounts of cobalt, or not to use them at all.
6. Nutritional supplements should only be administered at the manufacturer's recommended dose and frequency of dosing. The labels of such products should be read carefully every time that they are used.
7. Many products have not been evaluated to determine if they affect cobalt concentration in the horse. The use of unregistered, inadequately labelled supplements containing cobalt risk breaching the thresholds and is extremely unwise.
8. Vitamin B12 contains cobalt; the simultaneous use of multiple supplements containing cobalt and vitamin B12 risks breaching the thresholds.

## **XV... Notes on Zilpaterol**

Zilpaterol is a chemical substance which is commercially used in South Africa in feed for cattle destined for meat production. It is reported that this substance is harmful to horses and can result in adverse side effects.

Racehorse owners, trainers and breeders are urged to take precautionary steps to monitor the feed which is sourced for their horses and that it is obtained/ produced under conditions which would not result in Zilpaterol being present. It is for this reason that commercial chemical fertilizers are preferable in the growing of feed crops destined for horses.



## Guidelines for Penalties for Prohibited Substances

### Penalties for Prohibited Substances – Rule 73.2 Contraventions

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**Class 1: Substances which have no place in horseracing, including illegal or Forbidden Substances.**

**Class 2: Substances which have an obvious effect on the performance of the horse.**

**Class 3: Substances which have the potential to affect the performance of the horse with the potential to be abused.**

**Class 4: Substances which have a generally accepted veterinary (therapeutic) use in the racehorse but which have the potential to affect performance.**

**Class 5: Substances which have an accepted veterinary use in horses but which may have performance modifying ability.**

| CLASS OF SUBSTANCE | FIRST OFFENCE       | SECOND OFFENCE       | THIRD OFFENCE        | FOURTH OFFENCE       |
|--------------------|---------------------|----------------------|----------------------|----------------------|
| 1                  | R115K – Warning Off | R287K to Warning Off | R575k to Warning Off | -                    |
| 2                  | R69K to R115K       | R115K to Warning Off | R287K to Warning Off | R575k to Warning Off |
| 3                  | R34K to R69K        | R69K to R103K        | R172K to Warning Off | R287K to Warning Off |
| 4                  | R23K to R46K        | R34K to R80K         | R92K to R172K        | R172K to Warning Off |
| 5                  | Warning to R17K     | R17K to R34K         | R34K to R69K         | R80K and Upwards     |

**NOTE:**

- The above penalty range serves as guide and not an absolute requirement.
- Inquiry boards must be mindful of the stake and quality of the race in determining a suitable penalty (i.e. Maiden race vs Group 1 race).



**The following guidelines will be applied by Inquiry Boards when dealing with Prohibited Substance offences:**

**1. The nature of Rule 73.2 contraventions**

- 1.1 It must be appreciated that Rule 73.2 will apply to all classes of prohibited substance contraventions. A contravention of Rule 73.2, under any of the five classifications, remains a contravention of Rule 73.2.
- 1.2 This considering, by virtue of the different classes of contraventions, some contraventions of this Rule may be viewed in a more serious light than others. For example, a Class 2 substance should not be equated to a contravention involving a Class 5 substance. Inquiry Boards are thus advised that, in considering prior offences, an Inquiry Board must be guided and influenced by the category in which any prior offence was classified. A prior offence in a lessor category should not be slavishly regarded as the equivalent of a prior offence in a more serious category (class of substance).

**2. Warning off**

- 2.1 Inquiry Boards are advised to bear in mind that the schedule of penalties reflected on the proposed penalty guideline document are nothing more than that (that being guidelines), and these should not be applied mechanically. Inquiry Boards must apply their minds to the facts relevant to any particular matter (as well as the nature of any prior contraventions), so as to ensure that disqualifications are only imposed in circumstances which properly justify the disqualification or warning off of a trainer.
- 2.2 In applying the guidelines, an Inquiry Board should always be mindful that where the guidelines make reference to a "warning off", this is not the only option to adopt. There may well be other factors, such as the nature of the prior offences, which should be considered in arriving at a suitable penalty. A number of factors which should be considered are referred to in this document.

**3. The time period applicable to prior offences**

It is accepted that a prior offence, which occurred more than 5 years prior to the contravention being inquired into, will be disregarded for the purpose of applying the guidelines.

**4. Rule 73.1 contraventions**

It is emphasised that a contravention of Rule 73.1 ("administration") will not necessarily be dealt with in accordance with these guidelines. In general, administration is considered in a more serious light than a contravention of the "strict liability" rule, Rule 73.2.