

Reuss, Vicki A. (CDC/NIOSH/EID)

From: David Seftel [dseftel@gmail.com]
Sent: Friday, June 22, 2007 4:58 PM
To: NIOSH Docket Office (CDC)
Subject: Submission for Safety and Health in the Horse Racing
Attachments: David Seftel CDC - NIOSH Presentation Text May 22_2007.doc

Dear Kitty,

Attached please find submissions for the docket re: Safety and Health in the Horse Racing Industry and Best Practices.

Thank you again for making a powerful and valuable contribution to advancing our knowledge of this important occupational health challenge.

Please feel free to call or write with any question, comments or suggestions you might have.

Sincerely,

David Seftel, M.D.

**Examining Environmental Health and Safety Factors at Equestrian Racecourses
Nationwide: Rationale, Approach and Preliminary Focus**

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Presentation to National Institute for Occupational Safety and Health (NIOSH) of the Centers for Disease Control and Prevention (CDC), Department of Health and Human Services (HHS)

Meeting: Safety and Health in the Horse Racing Industry and Best Practices

Date: May 22, 2007, 9 a.m.-5 p.m. EDT.

Place: Hyatt Regency Crystal City at Reagan National Airport, 2799
Jefferson Davis Highway, Arlington, VA 22202

Because of the myriad complex inter-related factors, a useful approach to understanding the scope, scale and synergies is to track the process flow of work at the racetrack.

Racing is a highly time sensitive industry. All of the activities that take place are profoundly influenced by tight time constraints which can amplify the effect of environmental pathogens and stresses.

Grooms awake at 4 a.m. and prepare the horses to be taken out by the exercise riders and jockeys on the track between 4 a.m. and 5 a.m.

Exercise riders and jockeys will exercise between five and 14 horses until approximately 10 AM.

This is a particularly dangerous time since, even with night lighting, visibility is frequently suboptimal while a large number of trained and untrained, often undisciplined horses are engaging in asynchronous behavior on various parts of the surface.

The ambulance crew is not on the track during this period of time but remains on the sidelines. One of the perennial issues that impact negatively on care during this time is the fact that these ambulance crews are predominantly staffed by less experienced BLS certified EMTs rather than seasoned ACLS certified paramedics. They are often sleeping or studying and we have seen a pattern of slow and ineffective responses to horse breakdowns and human injuries during these hours.

Exercise riders weighing between 140 and 150 pounds will often exercise the very same horses in the morning at the same speeds as the jockeys who will race ride them (at two

thirds the exercise rider's weight) that same afternoon. There has been no peer-reviewed study documenting an excess of horse injuries associated with these higher weight riders.

After this the jockeys will take a nap or go to the hot box or sauna to reduce weight. Jockeys may spend anywhere from one to five hours in a state of induced hyperthermia. Many often take laxatives diuretics and self-induced vomiting in a daily ritual for a significant percentage of riders as Dr. Hornung has presented previously.

Jockeys will don featherweight boots, silks, protective helmets, flack jackets and goggles for each race. The high rate of serious head, chest and extremity injuries calls the protective value of these items into question.

The jockeys are weighed in and out of each race by the clerk of scales. In order to equalize the amount of weight born by different horses in the same race a combination of saddle pads and lead weights are used. This process of titrating weight is done variably by the jockeys themselves, their valets and the clerk of scales. Multiple individuals are involved in handling these weights, which are often unprotected with friable edges and visibly shed lead dust. Some are sewn into leather pockets while others are covered in a minimally protective paint. Heavy rubber mats placed under the saddle are supposed to be the primary weight equalizing units but due to the difficulty in getting fine balance with these alone, lead weights are almost always still needed to top the weight up. Interestingly, these mats were originally designed because the horses were noted to be getting lead-related pathology, but no co-existent concern was raised about the impact on valets and jockeys.

In-between races jockeys clean track debris thrown up by horses from their faces with water and sponges located next to their cubicles. Dedicated sinks for each jockey cubicle are generally not available. This frequent reuse of contaminated water and sponges leads to self inoculation with bacterial fungal and viral pathogens and exacerbates underlying allergic dermatoses.

The second bucket strategically positioned next to the jockey's cubicle frequently serves as a heaving bowl or spittoon. Cubicle upholstery is rarely washed or changed and usually consists of naked foam covered with towels or sheets, and thus serves as a poly pathological culture medium.

Unlike other professional athletes who spend relatively few hours in their locker rooms jockeys will spend anywhere between seven to 10 hours a day in these quarters interrupted briefly by races and the process of exercising horses.

Many jockey's rooms are antiquated and cramped with poor ventilation that contributes to the rapid spread on airborne and contact mediated communicable diseases that are appear to be more persistent and severe than those in comparable general population cohorts. This is due to coexistent malnutrition that contributes to immunosuppression and immuno incompetence.

In between races track surfaces are groomed and irrigated with water often recycled from barnyard effluent bio remediation ponds that are intrinsically high in coliforms at certain stages in the remediation process.

Coliform counts are required but regulatory oversight is rare therefore it is largely a self regulated activity, with variable compliance.

Large volumes all this water is aerosolized while being reticulated behind tanker trucks and depending on ambient wind, humidity and temperature a proportionate amount can be carried into the workspace of jockeys, outriders and the breathing air of thousands of fans who line up close to the track side.

Consideration needs to be given for installation of airborne sensors to monitor, measure and report excessive coliforms, airborne particulate and gaseous pathogens released from the dirt and synthetic surfaces as a result of grooming and horse riding activities.

With respect to the emerging installation of synthetic surfaces this movement appears to be largely driven by anecdotal evidence suggesting that these surfaces may be less traumatic to horses and therefore result in fewer breakdowns and soft tissue injuries. However no good independent peer-reviewed studies have been done documented the safety of the plume produced by horses hooves or tractor grooming to both horses and humans.

Our survey for the Jockey's Health Initiative revealed significant concerns regarding respiratory compromise that warrant closer investigation.

Synthetic surfaces contain a variable cocktail of rubber, plastic and silica based components many of which both individually and in concert with each other have been shown to contain pulmonary, cardiac, kidney, bone marrow and skin poisons with and without carcinogenic potential.

They are currently no federal or state regulations regarding the composition of synthetic surfaces much less regulatory oversight of their installation, maintenance and toxicity.

Relying on synthetic track manufacturers to self-certify safety is a risky proposition and given the relatively small-scale of these businesses, significant liability claims for adverse effects down the road are unlikely to be compensable.

As has been seen in the past in other businesses, it can be foreseen that these thinly capitalized synthetic surfaces installers will expeditiously exit their enterprises should liability claims threatened their future viability.

In summary, measured restraint is probably in order until independent peer-reviewed studies can be done to demonstrate that synthetic surfaces are indeed safe and healthy for horses and humans.

Jockeys are the only professional athletes in America that are subject to State mandated malnutrition. Archaic regulations steeped in tradition are tantamount to systematic state-sponsored starvation. While the morphology of the average American has up been amplified over the last hundred years, weight standards for jockeys have remained dangerously low. While there is certainly no unanimity amongst the jockey community about ideal body weight's there is consensus that a rational science-based approach is needed to illuminate this issue and provide genuine guidance to operators, trainers, owners, jockeys and regulators.

The medical challenges that jockey's faces are closely linked to environmental and occupational factors

We have described how things work at the racetrack to give an idea of who does what, when and where. Clearly dangers to health on and off the track are compounded by environmental and occupational factors. Thoroughbred horse racing is acknowledged to be the most dangerous or for professional sports, with more severe head injuries, clavicular fractures, spinal fractures, ankle and wrist injuries than any other.

What are the factors that contribute to this high accident rate?

There are no comprehensive peer-reviewed studies exploring this and we are hoping for NIOSH assistance in remediating this deficit.

It is critical that we examine the putative interactions between horse, human environmental and occupational factors.

Among horses accidents and injuries that affect both them and their human charges can be linked to issues like steroid abuse, poor training, poor breeding, inconsistent and unforgiving running surfaces, inadequate diagnosis and treatment of stress fractures and over running (excessively racing an exhausted and de-conditioned horse)

The human factors include jockey inexperience, incoordination, cognitive compromise, myopathy, hypoglycemia, hypertension, hypernatremia, hypoxia, hypokalemia due to diuretic abuse, hypomagnesemia, hyper and hypocalcemia, cardiomyopathy, acute and chronic renal failure, arrhythmia, alcoholic intoxication and pulmonary hypertension secondary to stimulant abuse.

The environmental factors include variable track conditions, track consistency and shock absorbing capability. Toxic dust plumes affect the health of both horses and humans adversely. The presence of excessive coliforms can contribute to a panoply of pathology. Poor ventilation in the jockey's rooms contributes to the rapid spread of infectious disease and the concentration of airborne toxins.

The occupational factors include contra-physiological weight limits with cascading immunocompromise due malnutrition

The Cascade of Causation

Each of these horse, human, environmental and occupational factors contribute to a cascade of causation. Looking just at weight limits, we have seen that it promotes anorexia, bulimia, stimulant abuse, laxative abuse alcohol abuse and narcotic abuse. These conditions may acutely and chronically precipitate electrolyte abnormalities and cognitive and muscular compromise that is characterized by impaired coordination concentration, balance and judgment in a sport that has absolutely no room for error.

These physical and mental challenges may well contribute to risky jockey behavior and poor responsiveness to dangerous riding situations and conditions and accounts, at least in part, for the record high rate of accidents with concomitant morbidity and mortality.

The Jockeys Health Initiative represents an unprecedented coalition of the horse racing industry, California state regulators, horse owners, trainers and jockeys who have come together in the search for science-based solutions to the challenges we face. The wholehearted participation of representatives from all of these parties in this hearing is true testimony to the diversity of the partnership that has evolved to support these science based solutions.

We welcome the guidance, support and leadership of NIOSH and the CDC in helping us to conduct the required research and implement the best solutions.

We look forward to the opportunity to partner with NIOSH to supplant mythology with methodology and replace fiction with fact.

Remediation Avenues to Explore

1. After comprehensive study has been completed - develop composite criteria to judge jockey fitness to ride. These may include elements of weight, body mass index, body fat state of hydration, coordination competency and glycemic normalcy.
2. Introduce mandatory nutritional education and counseling for all jockeys as part of the qualification process.
3. Develop and implement comprehensive and consistent trackside emergency care standards to avoid unnecessarily poor outcomes after injury.
4. Develop and implement solid standards for track side medical care staffing and facilities to bring horse racing in line with the medical standards and facilities provided by other professional athletic sports. This should include low dose x-ray and ultrasound to reduce the currently high cumulative radiation exposure suffered by jockeys.
5. Mandate the use of strong but flexible safety reins.

6. Eliminate all lead from the workplace
7. Improve horse running surface consistency and shock absorbing capability
8. Scientifically demonstrate the safety and efficacy of synthetic versus dirt surfaces prior to installation
9. Develop and implement a comprehensive nationwide injury and illness tracking system to be able to detect meaningful trends that can drive effective and expeditious corrective intervention.

Presentation 2

Lead in the Equestrian Workplace

Turning to the issue of lead in the workplace, it should be emphasized that there is probably no known safe lead level for horses or humans. All steps must be taken to reduce both aerosol and particulate exposure to this potent toxin.

Lead causes both acute and chronic toxicity, with the inhalational route being more significant. Given the poor ventilation and cramped quarters that characterize many jockeys rooms ingestion and inhalation of lead can be amplified

The human body contains approximately 120 mg of lead, and daily intake should not exceed 500 mcg. Lead has a half-life of approximately 62 years. Lead and calcium are used interchangeably by bone.

Lead has an affinity for bone and acts by replacing calcium.

Lead affects every system of the body.

Acute exposure to high levels of lead can result in death or significant damage to the brain or other organs. Lead can affect children at lower levels than those in adults. In children, the effects on brain are worse, especially at higher levels (lead encephalopathy).

In adults, the peripheral nervous system is commonly affected (peripheral motor neuropathy). This can lead to irritability, behavioral disorders, low intelligence quotient (IQ), ataxia convulsions, and coma in children and to wrist drop, foot drop, or lead colic in adults.

Studies so far confirm that exposure to lead causes renal damage, encephalopathy, and impaired cognitive function in children and in adults. Recent evidence indicates children with levels less than 10 mcg/dL may have compromised development and intellectual performance later in life.

Low-level lead exposure has been linked to the age-related kidney decline in renal function. Strong circumstantial evidence also suggests a link between renal disease, hypertension, and gout with lead poisoning.

Recent studies show that exposure to even low levels of lead may have potentially hazardous effects on the kidneys and on the speed of progression of kidney failure.

Lead causes a characteristic typical pattern of iron-deficiency anemia with hypochromia and microcytosis. Iron deficiency frequently coexists.

Reproductive System Effects - Lead not only reduces the sperm count in males but also increases abnormal sperm frequencies as well. Cancer - Lead has been classified as group 2B carcinogen in animals.

Most human exposure to lead occurs via ingestion, but in some cases, inhalation is the mode of entry into the body

Who handles the lead?

Lead weights with variable and often inadequate protection are handled on a daily basis by valets jockeys the clerk of scales, cleaners, children of jockeys, grooms and exercise riders.

How often do they handle lead?

1. Valets handle lead up to 14 times per day
2. Jockeys handle lead up to five to eight times per day
3. Clerk of scales may handle lead from two to four times per day
4. Cleaners may handle lead once or twice a day

How do they handle lead?

Observationally, most handle it with bare hands which are rarely washed after contact

How is lead stored?

1. Mostly in open air which aids aerosolization
2. Storage box often contains much visible particulate lead
3. Lead weights are frequently dropped or thrown on to one another causing further fracturing, particle generation and aerosolization.
4. Coating is frail and friable
5. No designated facility lead safety officer is available to provide continuous supervision
6. Lead weights are very difficult to encase robustly and even the leather-satcheted weights continually lead leak particulate material from the seams

What should be done?

1. Issue an immediate and binding directive to remove all lead from the workplace
2. Lead weights can be inexpensively replaced with cast iron
3. Jockeys who have their own personal lead weights must surrender them and ensure that household contacts, especially children, are tested that their household environment is detoxified
4. No cooking should be performed with lead weights
5. All potentially exposed persons should be submitted to hematological testing for lead levels - this is relatively inexpensive - we are doing it for \$4.19 per person
6. Bone lead studies using techniques like x-ray fluorescence analysis should be performed in select high exposure populations such as valets and jockeys to assess cumulative exposure.

This is not one of those sit-back-and-think-about-it decisions. We must act now to prevent a legacy of disease and disability.

Let's Put Lead to Bed

Thank You