

An update on the issue of biosecurity as it relates to the average horse owner.

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Our perceptions of “Biosecurity” initially stem back to its roots of indicating it as a means of dealing with bioterrorism. Movies abound with sinister and plausible plots, with countless agents being released on an unsuspecting population that has made us all aware that bioterrorism is a real possibility. We have even seen real life events that demonstrate that bioterrorism is a reality. This is not new. As far back as the Roman Empire, dead and rotting animals were thrown in enemy wells to poison the water supplies. From this, the definition of Biosecurity has evolved to represent a set of preventative measures designed to reduce the risk of theft or escape of pathogens or toxins from a laboratory situation.

This is not what we have come to talk about in the present. Our current concept of biosecurity, has taken on many new definitions. In the broadest sense, biosecurity is used to indicate the safety for all living creatures, with freedom of worry from sickness or disease. A biosecurity threat arises from the introduction of a disease or infectious agent into a herd or flock that did not previously have it present. The swine and poultry industries have been aware of the importance of biosecurity for years and have very effective programs in place. Both of these industries have large scale, intensive operations occurring on a single and often small site. Other industries have been slower to show interest in biosecurity; of the the horse industry has been probably the worst.

One of the most noted biosecurity problems in Canada occurred in the winter of 1951-52 when Foot and Mouth disease was introduced to a farm in Saskatchewan by an immigrant European farm worker. The virus was spread to 29 farms in total, involved almost 2000 animals being destroyed, and directly cost an estimated \$1 million to eradicate. Remember that in 1952, the Trans Canada Highway was being constructed for an estimated cost of \$1 million! The overall indirect cost to the agricultural economy in 1952 was over \$700 million. A similar event occurred in the U.K in 2001, but in that case, there were over 10 million animals killed, and the

total cost was over \$16 billion. The huge difference arises because of the increase in mobility of our animal populations today. In 1951, in the middle of winter in Saskatchewan, few people were going anywhere. The spread of the Foot and Mouth virus was quite slow and the affected animal numbers were low as compared to the U.K. in 2001. Large numbers of animals or people were not moving between farms. By contrast, in Alberta it is estimated that there are 40,000 animals on transport vehicles every day! That is a lot of animals moving around. One can only imagine how rapidly a virus such as Foot and Mouth could spread if biosecurity measures were not in place.

Current day biosecurity within the horse industry needs to involve an ongoing and developing attitude change among horse owners and other people involved. It must become a mindset that focuses on the improved health status of our animals, and the maintenance of that health status from a local level, right up to the national and international level. We have to develop practices that will prevent the introduction and eliminate the spread of disease or infectious agents among our horses. In the event that disease is introduced, we must also have a means of containing the disease so that it can not spread.

So how are infectious agents introduced to our animal populations? The most common method is through direct contact between infected and not-infected animals. This typically occurs at gathering areas such as auction marts or horse shows, or by introduction of new animals to a herd. The second most common method would be on contaminated equipment, clothing or footwear of people working around the animals. Other less common, but equally effective methods would be via the feed or water, through wildlife or rodents, insect, by the wind, or any other method that would bring an infectious agent to a susceptible population.

So what can we do to develop an effective biosecurity program for our horse herds, and what are the necessary components of that program? One of the key elements of an effective program is that there is traceability of the animals. If horses can not be tracked from one location to another, or even within a location, there can be no biosecurity program. Horses exposed to an infectious virus on Saturday at a horse show or auction mart must be able to be found on Monday if necessary. We must also be able to identify contact animals at the farm. Another key element is that the program must also be flexible. Because our horse populations are varied, mobile, and made up from such different backgrounds, the program must be adaptable to all situations that we find our horses in. Lastly, a biosecurity program must be sensible. It would make no sense to spend vast amounts of time and money preventing a disease that presents no threat of economic or health consequence to the horse population as a whole.

So where do we start? We can begin by adopting a protocol that allows us to only buy or bring horses from a location of known disease status. If the disease status is unknown, or the disease status of the facility the horse is leaving is unknown, the horses will be quarantined for at least 5 days (preferably 30 days). New animals being added to the herd or location should be vaccinated for the common diseases that the resident horses have been vaccinated for, before addition to the herd.

People moving between farms should be careful of the clothing and footwear that they use. Clean coveralls can be very effective to prevent contamination of clothing, but remember that they need to be washed before wearing them to another location. The same goes for boots. Clean and disinfect boots between barns, or have a pair of boots dedicated to each location. Don't wear your barn boots to go out in public! Another major thing that people can do is wash their hands. We know how important hand washing is for people to prevent the spread of infectious viruses from person to person, and the same applies to people working around horses. Hand washing will help prevent the spread of infectious agents from horse to horse and will also reduce the risk of you or your family being infected by an animal borne disease. Make sure that your farriers, veterinarians, other horse professionals, and visitors also follow these rules.

You should be able to track visitors to your farm as well as you track the horses that have been to your farm. A visitor log book works well for this. Visitors should not have free access to your property, and you should know where they are and have been. Visitors that travel from farm to farm and work directly with the horses pose the greatest biosecurity risk. Provide visitors with protection such as coveralls and boots that they can clean and leave behind. It is also a good idea to provide parking away from your horses and facilities to prevent contamination from their vehicle. Signs informing visitors of your protocol should be evident. Also make sure that your staff and family understand and follow your protocol.

If any vehicle is used for farm work, be sure that it is clean before you drive it off the farm, or between stables, corrals, pastures or barns. Be sure to remove all mud and manure. This also applies to equipment used on the farm.

Be sure to know the source of your feed and water, and buy only from reliable sources. Treat your horse's water supply if necessary. Prevent cross contamination of feed and water by different groups of animals. Shared waterers are a major source of contamination between groups of horses. Prevent cross contamination of buckets and feed tubs by not mixing tubs or buckets from sick horses and healthy ones. Keep them clean and always disinfect tubs and buckets from sick horses. Prevent as much contact as possible between wildlife and your

horses. This also applies to insects.

Early detection of any disease situation is necessary to prevent any further spread. Recognizing the signs and phoning your veterinarian as soon as possible to help prevent other animals from being affected is of paramount importance. Develop your individualized biosecurity program in cooperation with your veterinarian.

Biosecurity programs that we develop in the horse industry require multiple levels of accountability. On a local level, veterinarians and horse owners are accountable to their horses, other owners, and the local industry, and fall under the jurisdiction of the provincial government (Alberta Agriculture and Rural Development) and the Alberta Veterinary Medical Association. On a federal level, we have the Federal Department of Agriculture, the Canadian Veterinary Medical Association and the Canadian Food Inspection Agency looking after our national interests. On an international level, our national biosecurity program is accountable to the World Organization for Animal Health (OIE), the Food and Agriculture Organization of the United Nations, the World Health Organization, and the World Veterinary Association. All of these organizations are involved in animal health on a world wide basis. The OIE specifically has great effect on the trading ability of Canada with other nations. What we do at a local level can have great implications on what happens at higher levels.

### **Appendix - Common Disinfectants**

Numerous disinfectants are available for use in a biosecurity program. Each has its own advantages and disadvantages, but is appropriate for different situations. It is important to consult with your veterinarian to be sure that you are using the most appropriate disinfectant for the job. Develop a protocol to determine which disinfectant to use in specific situations. Remember, disinfectants are only part of a biosecurity program, and are not the whole program. Also be sure to dispose of used disinfectants in a proper manner.

#### Chlorine

Sodium Hypochlorite (bleach) is a widely available and broad spectrum disinfectant. It is diluted with water to provide the desired concentration of 0.5%. It is important to remember, that undiluted household bleach stored at room temperature in its original container has a shelf life of approximately 6 months, and if left in open containers will release chlorine gas which is irritating, and also weakens the disinfectant solution. Mix fresh solutions daily before use. Never mix bleach with acidic compounds, or compounds containing ammonia, as this will quickly release toxic chlorine gas. The presence of organic material greatly reduces the effectiveness of bleach. Proper cleaning with a detergent to remove organic material is necessary before applying bleach as a disinfectant.

#### Phenolic Compounds

These are a broad group of agents that formed some of the earliest germicides. They are active against only certain bacteria and viruses. Their most common use is as an antiseptic on environmental surfaces. Two of the most common phenolic compounds are Triclosan and Chloroxylonol. Dilution with hard water will inactivate these products, so should be mixed with deionized water. Phenolic compounds can be very irritating to the skin and eyes, and may be absorbed through latex gloves, so exercise caution when using these products, and follow the material handling directions provided with each product.

### Quaternary Ammonium Compounds

These compounds are commonly used in combination with other germicides, such as alcohols. Like the phenolic compounds, their activity is limited to certain bacteria and viruses, and is greatly reduced by organic matter, hard water, and certain detergents. Therefore selection of a pre-cleaning agent is very important. These compounds tend to be low odour, and are non-irritating.

### Alcohols

The two most commonly used alcohols are ethanol and isopropyl alcohol. They are active against certain bacteria, fungi, and some viruses, but not against bacterial spores. They should be used at a concentration of 70% alcohol in water. Their greatest effect is in combination with other agents. Ethanol alone should not be used to disinfect hands, as it will dry the skin. Many alcohol-based hand rubs are available, and are recommended for the decontamination of lightly soiled hands at times when proper hand washing is inconvenient or not possible. Alcohols are also very volatile and flammable, and must not be used near an open flame. Alcohols may also harden rubber products, and cause certain glues to dissolve, so be careful where they are applied.

### Iodine & Iodophors

The action of Iodine and Iodophor products is similar to chlorine and they may be slightly more effective when organic material is present. Iodine alone is generally not used as a disinfectant, as it stains fabrics and environmental surfaces. It should also not be used on aluminum or copper. Polyvidone-iodine is used as a safe surgical scrub and pre-operative skin antiseptic. Iodine based products should be stored at 4-10°C to prevent the growth of potentially harmful bacteria.

### Virkon

Virkon is a balanced stabilized blend of peroxygen compounds, surfactant, and organic acids in an inorganic buffer system. It has a proven effect against a large number of bacteria, viruses, spores, and fungi, and claims safety and ease of use. It is widely used on laboratory equipment and instruments where autoclaving is not possible or practical.