



AEM Tier 2 Worksheet

Horse Farm – Waterborne Pathogen Management

Glossary

Coliforms: A group of bacterial, usually from animal or human wastes that are used as an indicator of water contamination.

Composting— A biological degradation of manure and other organic material in an aerobic process, generating heat. With horse manure, regular turning of the pile enhances aerobic conditions.

Cyst: Environmentally-resistant stage of Giardia.

E. coli: Bacterial species that live in the intestinal tract of multiple hosts and is shed in feces. *E. coli* 0157:H7 differs from other normal intestinal *E. coli* strains because it carries several toxin-producing genes capable of affecting humans. It can cause illness ranging from bloody diarrhea to kidney failure in humans. There is no apparent illness in other host species and is only transiently carried in the intestines of most hosts.

Background

Giardia and *Cryptosporidium parvum* are two protozoa parasites found in animal manure that can cause infection in humans. Bacteria such as *E. coli* 0157:H7, Salmonella, and Campylobacter are also found in manure and also have the potential to cause diarrhea and illness in humans. Infants, the elderly, and individuals with immune system deficiencies are at greatest risk for infection. Infection occurs from ingesting contaminated food or water. Poor hygiene practices while handling animals and drinking from a contaminated source are the major routes of infection.

Unlike these protozoa and bacteria, intestinal viruses from animals do not generally infect humans. Viruses are considered to be host-specific and farm animals are not considered to be a source of infection for humans unless human sewage is present.

Surface water supplies for drinking and recreation are considered to be most susceptible to contamination by protozoan and bacterial pathogens. Chlorination and other standard water treatments are effective in killing bacteria, but do not kill protozoa pathogens. Specific water filtration practices are required to remove Giardia cysts and *C. parvum* oocyst from water.

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Agricultural Water Quality Principle:

The farm operator should employ management practices to provide multiple barriers to the introduction and spread of pathogens in domestic livestock and their transport to surface and groundwater resources.

Glossary continued...

Hydrologically Sensitive Area: Land area with a high potential for transporting pollutants to surface or ground water.

NYSHHAP: New York State Horse Health Assurance Program. A voluntary certification program designed to promote and to teach a proactive approach to equine health, care and welfare through the use of certain “Best Management Practices” and to recognize exceptionally managed equine operations.

Oocyst: The environmentally-resistant stages of *Cryptosporidium*.

Protozoa: A group of microscopic parasites that include the *Giardia* and *Cryptosporidium* genera. Infected hosts shed cysts (*Giardia*) or oocyst (*Cryptosporidium*) into feces. Cysts and oocysts are capable of surviving for months in the environment, especially under cool and moist conditions.

Runoff: The portion of rain, snowmelt or irrigation water that leaves the field over the land surface.

Background continued...

Additionally many communities with filtration capabilities rely on unfiltered water sources as their back-up water supply. Poorly-managed filtration operations can result in outbreaks of these parasites

On farms, manure from animals six months and younger are likely source of *C. parvum* and *Giardia*. *C. parvum* is limited to animals less than 30 days old. *Giardia* has been detected primarily, but not exclusively, in animals younger than six months of age. Foals and young horses can shed *C. parvum* and *Giardia* even when they appear to be healthy. As a result, surface runoff from animal housing, turn out and exercise areas pose a potential risk to water supplies.

On-farm pathogen management must focus on preventing fecal contamination of livestock feed and water, preventing gross contamination of surface water by manure, and protection of wellheads, sink holes and other direct links to ground water. A **three-barrier approach** should be employed to control pathogens on a farm. These practices may also benefit a farm with improved animal health and performance.

The **first barrier** involves reducing the potential for pathogens to enter the farm from outside sources such as:

- the introduction of infected animals;
- the transportation of infected manure onto the farm on clothing, boots, or equipment; and
- pets, rodents, and other animals transporting contaminated manure from other farms.

The **second barrier** is to minimize cross-contamination among animals on the farm. Pathogen movement and multiplication on the farm can be minimized by:

- keeping animal-raising areas clean; and
- ensuring that all feeds and feeding utensils are clean.

The **third barrier** is to restrict movement of contaminated feces into nearby watercourses by:

- preventing runoff from housing, exercise lots, and manure storage areas; and
- spreading manure on non-hydrologically sensitive areas.

AEM Tier 2 Worksheet: Horse Farm – Waterborne Pathogen Management		Potential Concern		
Factors Needing Assessment:	Lower 1	2	3	Higher 4
How is manure from horses of 12 months of age and under handled?	Properly composted prior to spreading. AND Applied to a non-hydrologically sensitive site when ground is not frozen, snow-covered or saturated.	Mixed with adult horse manure. AND Stockpiled for more then 6 months. AND Applied to a non-hydrologically sensitive site when ground is not frozen, snow-covered or saturated.	Mixed with adult horse manure. AND Stockpiled for less then 6 months. AND Applied to a non-hydrologically sensitive site when ground is not frozen, snow-covered or saturated.	Manure is spread daily.
How are foaling stalls managed?	Stalls are stripped, disinfected and rested at least 2 weeks before re-use.	Stalls are stripped, disinfected. BUT Not rested at least 2 weeks before re-use.		Stalls not cleaned, disinfected or rested between foalings.

Other:

1. Is the farm participating in the NYS Horse Health Assurance Program?
2. Do you have an overall herd health management plan?
3. Do your horses have access to streams, creeks, rivers, or lakes?

Other Continued...

4. Are non-chlorinated water supplies for your horses regularly tested for coliform bacteria? Are these tests done specifically during droughts or after extreme rainfall?
5. Are young horses allowed to graze land that has had manure (that has not been properly composted) applied within the past six months?
6. Is manure spread on land that will be used for pasturing or production of hay within six months after spreading?
7. Is your barn well ventilated?
8. How often are stalls cleaned and bedded?
9. Are run-in sheds cleaned regularly?
10. How often are feed and water buckets (or waterers) cleaned?
11. Are steps taken to protect feed and water from vermin, flies and other vectors of disease?

Comments: