

Biosecurity Performance Standards (BPS)

Raw Milk Collection and Transport

This document includes Biosecurity Performance Standards developed in consultation with the dairy industry, state animal health officials, federal animal health officials and academic partners with the goal of preventing FMD virus spread during milk movement in an outbreak. The BPS establish the overarching goals but require States and Regions to develop specific protocols or procedures based on their local regulations, available resources, climate, capabilities, and scope of the outbreak.

Factors to consider for some of the BPS are also included to aid in pre-event communication, coordination, and planning on a more local/regional level prior to an FMD outbreak. Possible options, approaches and tasks for government and industry to discuss when developing state or regional plans are described.

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BIOSECURITY GUIDANCE TO SUPPORT RAW MILK MOVEMENT TO PROCESSING DURING AN FMD OUTBREAK



Purpose

This document describes recommended biosecurity performance standards (BPS) for dairy premises, milk haulers, and dairy processing plants to implement for raw milk movement from dairy premises located in a foot and mouth disease (FMD) regulatory Control Area to commercial processing. FMD is a highly contagious foreign animal disease that infects cattle and other cloven-hooved livestock, such as swine, sheep, goats, and deer. FMD is not a public health or food safety concern. FMD has been eradicated from the U.S. since 1929 but it is present in many other countries and causes severe production losses in animals. Compliance with the BPS described herein is intended to reduce the chance of spreading FMD via milk trucks/tankers and haulers/drivers, and increase the chance of timely permitting of raw milk (if required by regulatory officials) from dairy premises, not known to be infected, to processing. Implementation of these BPS will be based upon the unique features of each location and the final requirements will be established by the Incident Management Team (IMT) for a specific response.

During an FMD outbreak, local, state and federal decision makers (the IMT) will need to provide industry direction on handling raw milk on infected and uninfected dairy premises. The inability of dairies to continue to ship raw milk to processing will cause significant environmental, animal disease transmission, and economic challenges. The BPS here coincide with business continuity response planning by minimizing unintended negative effects of an FMD response on agriculture, while at the same time achieving the goals of disease containment and control. Monitoring and verifying proper biosecurity protocol implementation will be necessary to limit FMD virus spread.

Intended Audience

Milk haulers/drivers, dairy producers, processing plant personnel and any allied industries interacting with dairy operations need to be aware of the BPS that will be required by the Incident Management Team, in order to enable raw milk movement within and from a Control Area during an FMD outbreak.

Local, state, and national level officials involved in developing policy and/or managing an FMD outbreak (Incident Management) should be familiar with this document to aid in timely decision making to permit raw milk movement off farm to processing.

Veterinarians and animal health technicians who are members of the USDA-APHIS National Animal Health Emergency Response Corps (NAHERC) or their state or county veterinary response teams carrying out FMD surveillance or control efforts on dairy operations should also familiarize themselves with these protocols.

Scope

The BPS are guidelines for:

- Decision makers at a state or regional level to develop specific options to mitigate FMD virus spread by milk trucks/tankers and haulers/drivers within an FMD Control Area based on response goals, industry capabilities, environmental considerations, and size and duration of the outbreak.
- Dairy premises owners to develop their own farm-specific standard operating procedures (SOPs) that meet or exceed the BPS with the goal of preventing exposure of their cattle to FMD virus through raw milk collection and movement activities.
- Milk haulers/drivers to take necessary precautions to ensure FMD virus is not spread by their truck/tanker, equipment, hands, clothing, or footwear during milk movement.
- Dairy processing plant personnel to ensure FMD virus in raw milk is not spread to susceptible species by vehicle movement, on clothing or footwear.

This document was evaluated, revised, and improved based on the risk assessment and feedback from working groups that included dairy producers, haulers, processors, state and federal animal health officials, and academic professionals.

Overarching Goal

These BPS for Raw Milk Collection and Transport are intended to provide guidance to assure FMD virus is not spread by milk trucks/tankers and the milk hauler/driver via the movement of raw milk. This includes movement to and from dairy premises and processing plants located within or outside of a Control Area. The concepts provided in this document align with the content provided in the USDA FMD Response Plan (http://www.aphis.usda.gov/animal_health/emergency_management/downloads/fmd_responseplan.pdf).

Focus of the BPS for Raw Milk Collection and Transport:

- Raw milk movement from a dairy premises with no evidence of FMD virus infection in an FMD Control Area via milk tanker to processing
- Biosecurity guidance for animals, other animal products, people, and vehicle movements can be found at www.securemilksupply.org

Initial Assumptions:

- FMD has been diagnosed in the United States
- Control Area(s) have been established around Infected Premises
- Animal and product movement restrictions are in place for dairy premises in the Control Area
- Public roadways in the Control Area are contaminated with FMD virus
- Dairy premises owners are responsible for keeping their herd from becoming infected with FMD virus.
- BPS outlined here apply to dairy premises in the Control Area producing Grade A milk with no evidence of FMD virus infection (classified as Monitored Premises by the USDA FMD Response Plan).
 - This includes dairy premises that may be in the early stages of an infection and have cattle that may be infected, but not yet detected.
- BPS as outlined here are being implemented and verified (as specified by the IMT)
- Milk is picked up from one dairy premises and transported under permit directly to a processing plant—OR—
- Milk is picked up from multiple dairy premises by a single tanker and transported under permit to a processing plant
- Milk tanker Clean-in-Place (CIP) uses an acid/alkaline wash
- Weather conditions lend themselves to effective cleaning and disinfection of vehicles (e.g., no sub-freezing temperatures)

SMS Plan for Continuity of Business

The Secure Milk Supply (SMS) Plan provides a workable continuity of business (COB) plan for dairy premises with no evidence of FMD infection in a regulatory Control Area to move raw milk to processing that is credible to Responsible Regulatory Officials (local, state, tribal, and federal officials, as appropriate). Officials must balance the risks of allowing movement of raw milk against the risk of not allowing movement and thus the necessity for on farm disposal of raw milk.

The SMS Plan is the result of a multi-year collaborative effort by industry, state, federal, and academic representatives. Funding for its development was provided by USDA Animal and Plant Health Inspection Service (APHIS). The SMS Plan provides **guidance only**. In an actual outbreak, decisions will be made by the Responsible Regulatory Officials based on the unique characteristics of each outbreak. The SMS Plan and associated guidance documents can be found at www.securemilksupply.org.

Assessing the Risk of Moving Raw Milk to Processing

Two risk assessments were completed that addressed the movement of raw milk during an FMDv outbreak. The first report, “*Risk Assessment for the Transmission of Foot-and-Mouth Disease via the Transport of Raw Milk Into, Within, and Outside of a Control Area during an Outbreak*”, referred to as the Baseline RA, identified areas of risk that could result in further spread of FMDv from an infected but undetected dairy premises through transport of raw milk to processing under current standards (no additional mitigations or restrictions in place). Subsequent to that report, the risk assessment team evaluated the BPS for the Dairy Premises, Milk Haulers, and Dairy Processing Plants. The outcome of this analysis is a second report, “*Risk Assessment-Biosecurity Performance Standards*”

Analysis for the Risk Assessment for the Transmission of Foot-and-Mouth Disease via the Transport of Raw Milk Into, Within, and Outside of a Control Area during an Outbreak”, referred to as the RA-BPS Analysis. This report evaluates the effectiveness of the BPS measures to address and mitigate the risk pathways identified in the Baseline RA. Based on those findings, this BPS document was finalized as described herein.

An Executive Summary for the RA-BPS Risk Assessment is in Appendix 1. This summary highlights the changes in risk for each pathway under current industry standards (no mitigations in-place) and with implementation of BPS (mitigations in-place). It is important to understand the risk evaluation is based on an integrated approach, meaning that all applicable BPS were applied together to decrease risk of disease spread. Therefore, the BPS should not be considered a “menu” in which one can pick and choose steps independently. Each step is important to the overall goal of reducing FMDv entry or spread. Deviations from the BPS due to limitations in resources or inclement weather may result in higher risk of viral spread than presented in the risk assessment. Selected sections in this BPS document contain risk ranking information to illustrate the significant change in risk with implementation of the BPS. Table 1 in Appendix 1 contains a summary of the risk results for the Baseline and RA-BPS Analysis reports.

1. INFORMATION ABOUT FOOT-AND-MOUTH DISEASE

1.1 Species affected and clinical signs

Foot-and-mouth disease (FMD) is a highly contagious viral disease of cattle and other cloven-hooved animals such as pigs, sheep, and goats. FMD is not a public health concern and does not affect food safety. Signs of illness in affected animals include fever, blisters that become ulcers on the mouth, tongue, feet or teats, increased salivation or slobbering, decreased feed consumption, and lameness. This may result in production and body condition loss, but typically does not cause death in adult animals. Death rates in young animals can be high.

1.2 Incubation period

In cattle, the incubation period ranges from 2 to 14 days. FMD virus can be shed in milk up to 4 days before clinical signs appear.

1.3 Controlling FMD in the United States

The last known outbreak in the United States was in 1929; however, the disease is common in other parts of the world and therefore poses a risk to the U.S. If FMD is diagnosed in the U.S., the control measures would include movement restrictions which will affect over-the-road transport of live animals and animal products (milk, colostrum, semen, embryos). Refer to the USDA FMD Response Plan for more information:

http://www.aphis.usda.gov/animal_health/emergency_management/downloads/fmd_responseplan.pdf

1.4 Transmission of FMD

FMD virus can enter or exit an operation via:

- **Live animals** shedding virus (e.g., cattle, pigs, sheep, goats);
- **Live animals** transporting virus from place to place such as horses/dogs/cats/wildlife (via contaminated fur, hooves, foot pads), and birds (via contaminated feet/claws or feathers);
- **Animal products** (unpasteurized milk, colostrum) carrying the virus;
- **Fomites** (contaminated inanimate objects) such as dead animals, feed, water, people’s clothing/footwear, human nasal passages (rare; carried less than 28 hours after contact with infected animals), transport vehicles (e.g., animals, feed, milk, rendering), off-farm vehicles or equipment contaminated with infected excretions (e.g., manure) or secretions (e.g., milk, colostrum, saliva); and
- **Airborne viral transfer** from infected to susceptible animals in close proximity under ideal weather conditions.

FMD virus can be transmitted to cattle through the following exposures:

- **Direct contact** with an infected animal
 - Virus shed in nasal secretions, blood, milk, urine, feces, saliva, semen, or during pregnancy (from infected cow to calf)

- **Fomites** (contaminated inanimate objects) such as dead animals, feed, water, people's clothing/footwear
- **Oral** - consuming contaminated feed and/or milk
- **Aerosol** - inhaling virus particles; highly variable by serotype, usually requires close contact with infected animals.

1.5 Destroying the virus

FMD virus can be destroyed chemically or thermally. The U.S. Environmental Protection Agency (EPA) has registered commercial disinfectants for use against the foot-and-mouth disease virus. During a large-scale FMD outbreak, there may not be a sufficient supply of readily-available EPA-registered commercial FMD virus disinfectants. In that case, the EPA may authorize the use of additional selected chemical disinfectants by the U.S. Department of Agriculture, State Departments of Agriculture, and selected individuals under certain circumstances to disinfect surfaces potentially exposed to FMD virus. Disinfectants are only effective if used appropriately. For more information about disinfectants, please see section 8.

Normal high temperature short time (HTST) pasteurization (161°F [72°C] for 15 seconds) significantly reduces the viable FMD virus in milk with a pH <7.0, but does not completely eliminate it. Processing plants in the U.S. may pasteurize at slightly higher temperatures and slightly longer times than this, but there is no research on virus elimination with these slight changes. Heating milk to 100°C (212°F) for 20 minutes will inactivate the virus. Manure slurry must be heated to 67°C (153°F) for three minutes to destroy FMD virus.

For more information about FMD, see:

- Foot and Mouth Disease Fact Sheet
http://www.cfsph.iastate.edu/Factsheets/pdfs/foot_and_mouth_disease.pdf
- OIE Foot and Mouth Disease, Disease Card
http://www.oie.int/fileadmin/Home/eng/Media_Center/docs/pdf/Disease_cards/FMD-EN.pdf
- OIE Terrestrial Animal Health Code, Foot and Mouth Disease Chapter
http://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_fmd.htm

2. TERMS

Best Practice – the ideal method or procedure that can help achieve or exceed a given biosecurity performance standard (BPS) and further mitigate FMD virus spread.

Biosecurity Performance Standard (BPS) – overarching goal to prevent FMD spread which can be achieved through best practices and standard operating procedures (SOPs). Referred to as “performance standards” in this document. BPS are designed to be objective, realistic, and implementable.

Clean-in-Place (CIP) – procedures that allow for the cleaning and sanitizing of equipment without dismantling, generally by means of an automated system. U.S. Food and Drug Administration (FDA) Pasteurized Milk Ordinance (PMO) requires CIP of milk trucks/tankers once every 24 hour period when in use. Clean-out-of-place (COP) requires equipment be dismantled to clean and sanitize it.

Clean tanker – no visible contamination is evident on the external surfaces of the tanker and the cab is free of debris and contaminated materials.

Cleaning and Disinfection (C&D) Station – a physical location equipped with adequate water, soap and appropriate disinfectant against the disease organism of concern. It must be situated to capture or minimize run-off into waterways and animal housing or traffic areas. Personnel operating the disinfection station should be trained in proper selection and use of personal protective equipment and the principles of cleaning and disinfection. USDA-APHIS will provide guidance on selecting approved and effective disinfectants. Any discharge from the station must be managed per state and local regulations.

Control Area – Consists of an Infected Zone and a Buffer Zone and is at least 10 km (~6.21 miles) beyond the perimeter of the closest Infected Premises. This area may be redefined as the outbreak continues. (USDA FMD Response Plan September 2014)

Controlled access point(s) – designated areas where vehicles, people, equipment or supplies cross the Line of Separation (LOS). Movement through the controlled access point in either direction requires instituting appropriate biosecurity measures. Movement of vehicles, equipment and supplies across the LOS requires an operational C&D station at the controlled access point. Movement of people through the controlled access point(s) requires specific personal protective gear.

Critical control point – a step where control can be applied and is essential to prevent or eliminate FMD virus from entering an operation and exposing susceptible animals.

Dairy premises – the physical location where cows are milked and milk is stored until picked up for over-the-road transport.

Dairy processing plant – the facility that receives, stores, processes, distributes, and sells products made from milk.

Direct load – the practice of pumping milk rapidly cooled to less than 40°F, from the milking parlor to a movable bulk milk tanker parked at the dairy premises, without the use of a farm storage tank (stationary bulk tank, milk silos). The milk hauler/milk tanker driver picks up this milk tanker when it is ready to take directly to processing and leaves an empty milk tanker on the dairy premises to collect the next load of milk.

Doffing PPE – taking off personal protective equipment (PPE) in the specified order for the situation at hand. When doffing PPE, it is important to take precautions and follow the proper procedure to ensure contaminants (e.g., FMD virus) are not carried or spread off of the premises via people, vehicles, or equipment.

Donning PPE – putting on PPE in the specified order for the situation at hand.

Foot-and-mouth disease (FMD) outbreak – upon initial diagnosis of FMD in susceptible species (cloven-hooved animals including cattle, sheep, goat, pigs, deer, etc.) in the United States, a series of response activities depending upon the specific situation and response goals will be initiated by State, Federal and Tribal authorities, as well as agriculture stakeholders. Activities may include implementing biosecurity protocols and animal/vehicle movement restrictions to achieve desired containment, using emergency vaccination, and culling infected animals to control or eradicate FMD.

Incident Management Teams (IMTs) – incident command organizations made up of the command, operations, planning, logistics, finance/administration members, and appropriate functional units. The IMT is responsible for the critical activities that will be involved in responding to an FMD outbreak, such as issuing movement permits based on biosecurity and surveillance information.

Infected Premises – the location where a presumptive positive or confirmed positive FMD case in livestock exists based on laboratory results, compatible clinical signs, case definition, and international standards.

Line of Separation (LOS) – a clearly identified boundary around or within a premises with susceptible animals to separate off-farm traffic from on-farm movements of vehicles, people and animals. The purpose of the LOS is to prevent movement of FMDv onto a premises where susceptible animals can be exposed. Crossing the LOS should only occur through a controlled access point and requires following appropriate biosecurity measures.

Milk hauler – the person licensed by the State regulatory agency responsible for milk measuring, sampling, pumping, and transporting over-the-road in a milk tanker; in some states, personnel on the dairy premises can become licensed to perform these tasks.

Milk leakage – the loss of milk from the tanker via an unusual event or equipment failure which results in milk from one or more dairy premises being deposited onto areas outside of the tanker. This could occur due to accidental losses from the dome-lid assembly or worn tanker equipment (valves and fittings, etc.) allowing deposition of potentially infectious milk onto roadways during transit and on subsequent dairy premises.

Milk spillage – loss of milk from tanker equipment during normal loading and unloading activities while on a dairy premises or at a processing plant. If proper procedures are followed, the spillage of milk during loading activities on farm should only contain milk from that farm (source farm).

Milk tanker (also referred to as a milk truck) – the transport vehicle used to move milk from a dairy premises over-the-road to processing.

Milk tanker driver – a person responsible for driving a milk tanker and milk samples over-the-road; this person is not licensed by the State regulatory authority to measure, sample, or pump raw milk on a dairy premises. Referred to in this document as ‘driver’.

Monitored Premises – premises objectively demonstrates that it is not an Infected Premises, Contact Premises, or Suspect Premises. Only At-Risk Premises are eligible to become Monitored Premises. Monitored Premises meet a set of defined criteria in seeking to move susceptible animals or products out of the Control Area by permit. (USDA FMD Response Plan September 2014)

Personal protective equipment (PPE) – special clothing and equipment designed to act as a barrier between an individual and a potential biological hazard, such as a highly contagious pathogen or disinfectants. PPE can include items to protect the eyes, face, respiratory tract, hands, body, feet, head and ears. Personal protective equipment used in the event of an FMD outbreak is aimed at preventing the spread of this highly contagious virus between animals and locations through people’s actions. FMD is not a public health concern.

Transfer hose – milk hose used to transfer milk into the tanker from a farm bulk tank or other bulk milk source. Some farms have dedicated transfer hoses that remain on farm and are cleaned and sanitized with their milking equipment; other farms rely on the transfer hose that travels with the milk tanker and is cleaned and sanitized at the plant or truck wash facility.

Vehicle Door Boundary – the vehicle cab door should be considered a boundary to keep the cab from becoming contaminated with FMD virus. When exiting the cab, appropriate PPE needs to be donned by the driver specific to the tasks to be carried out.

3. OVER-THE-ROAD TRANSPORT IN A CONTROL AREA

The following BPS and best practices apply to milk trucks/tankers moving milk to, from, and within a Control Area. Movements outside of a Control Area are not under the same requirements unless designated by the state or federal animal health authorities. Transport of milk at milk transfer stations may be prohibited during an FMD outbreak unless specific biosecurity steps are in place. Milk transfer stations are not covered in this document.

3.1 Milk Truck/Tanker Movement and Storage

3.1.1 Milk haulers/drivers should strive to keep the cab interior and the external surfaces of the truck as clean as possible in an FMD Control Area; the performance standard is no visible contamination within the cab or externally on the tanker when participating in milk transportation in a Control Area.

3.1.1.1 Evidence for a clean cab interior should include the absence of visible organic material on all surfaces.

- There should be no trash, dirty clothing or footwear, or unnecessary supplies in the cab.

3.1.1.2 Evidence for external cleaning includes the absence of visible organic material on all surfaces.

- The driver should keep a record of exterior truck washes (commercial or C&D stations on dairy premises).
- **BEST PRACTICE:** Milk trucks/tankers not in use after being cleaned and sanitized should be stored in a secure manner to limit access by unauthorized people. Storage at facilities other than a secure truck yard, including the milk hauler/driver’s home, should be approved by Incident Management Team. No trucks/tankers will be allowed onto farms housing cattle, pigs, sheep, or goats in a Control Area without a permit for picking up milk.

3.1.2 The Incident Management Team may designate traffic corridors in the Control Area; the performance standard is for milk haulers/drivers to adhere to designated traffic corridors and avoid tire contact with manure or other organic material where possible.

3.1.2.1 The milk hauler/driver should have the ability to communicate with his/her dispatcher and/or the Incident Management Team before and throughout their route.

- Milk routes may change frequently pending environmental conditions.
- Notification of the farm personnel is important should there be delays in milk pick-up to ensure the cleaning and disinfection station is set up and ready to go upon arrival if the truck must cross the LOS.

3.1.2.2 The Incident Management Team may communicate restricted areas to the industry which identifies safe corridors and communicates those options to milk haulers/drivers.

3.1.2.3 Milk haulers/drivers should keep a daily written log of additional stops (food, fuel, maintenance) en route to dairy premises and the processing plant.

- This information should be provided to their dispatcher or Incident Command upon request for trace-back or trace-forward purposes.
- Minimizing cross-contamination with other vehicles or people having contact with cattle, sheep, goats, or pigs should also occur once the hauler and tanker have left the farm.
- The hauler/driver should keep all clothing/footwear clean when exiting the tanker during stops to prevent contaminating themselves and the truck cab. Protective booties/disposable boots should be worn if walk paths are visibly contaminated and properly removed and disposed of before re-entering the cab.

4. CORE BPS FOR MILK COLLECTION ON A DAIRY PREMISES

The following BPS are considered ‘core’ in that they aim to minimize the risk of FMD introduction onto a dairy premises. Whenever milk haulers/drivers are involved in milk collection activities, there are certain precautions that need to be taken. The milk truck/tanker may visit more than one dairy premises in a day. Therefore, minimizing exposure to mud, manure, milk, and organic matter will help decrease the overall infectious burden of FMD virus that could be picked-up and transported by the tanker/hauler between premises. Milk samples collected on farm should be handled as if they contain FMD virus to avoid contamination of the milk hauler/driver or the cooler and its contents during transport.

In all situations, there are biosecurity performance standards that should be followed to minimize the risk of FMD virus entering a dairy premises.

- Dairy premises owners will want to ensure proper cleaning and disinfection steps are being implemented during milk pickup to ensure their animals are not exposed by the actions of off-farm personnel or vehicles.
- Milk haulers/drivers need to take necessary precautions to ensure FMD virus is not spread by their truck-mounted transfer hose, clothing, or footwear during milk collection.
- Regulatory officials want to ensure that proper cleaning and disinfection steps are being taken during milk pick up so FMD virus is not transported between dairy premises.

Each dairy premises should develop a farm-specific standard operating procedure (SOP) that meets or exceeds the biosecurity performance standards that is acceptable to the decision makers in their state.

4.1 Milk Haulers/Drivers on a Dairy Premises

4.1.1 While the hauler/driver is involved in milk collection activities, the performance standard is no direct contact with farm personnel, animals, or milk products to be fed to susceptible animals.

- Milk hauler/driver should communicate, but have no direct contact, with farm personnel.
- Milk hauler/driver should have no contact with any animals.
- Milk hauler/driver should have no contact with animal housing or animal traffic areas.
- Milk hauler/driver should have no contact with products to be fed to susceptible animals (e.g., raw or pasteurized colostrum, raw or pasteurized milk in open containers) or with equipment used in feeding animals.

4.1.2 Milk Haulers/Drivers involved in milk collection activities; the performance standard is to prevent raw milk from contacting their street clothing and footwear.

4.1.2.1 The tanker cab should be considered and maintained as a clean, non-contaminated zone.

- The cab door should be considered a “Vehicle Door Boundary” between the cab and potentially contaminated outside areas.
- Adequate supplies of clean gloves and protective footwear for a full shift of milk collection and delivery should be kept in the cab (see section 9.2).
 - **BEST PRACTICE:** Keep protective outerwear and an extra set of clean street clothes in the cab in the event of milk spray or milk spillage occurs. The goal is to not wear raw milk contaminated clothing from farm to farm.
- During an FMD outbreak, there should be no other passengers or animals in the cab of the vehicle.

4.1.2.2 Milk haulers/drivers must put on, at a minimum, gloves and protective footwear.

- For full details on donning and doffing PPE, see section 9.2.
- Single use (disposable) gloves and footwear covers must be worn while collecting milk.
- **BEST PRACTICE:** Since milk spray during transfer hose connection can occur, protective outerwear should be worn over street clothes.
 - As an alternative to routine use of full protective outerwear, if raw milk dampens street clothes, the hauler should change into clean street clothes before entering the cab. The soiled clothes should be enclosed in a garbage bag until they can be laundered.

4.1.2.3 Before re-entering the cab, the milk hauler/driver must remove gloves and disposable outerwear/footwear or disinfect protective outer clothing and footwear.

- Disposable items should be placed in a receptacle that can be disposed of in a manner that does not contaminate personnel, equipment, or animal areas.
- Waterproof outerwear with visible raw milk on it should be sprayed with disinfectant.

4.2 Milk Trucks/Tankers on a Dairy Premises

4.2.1. The performance standard is for dairy premises personnel to record all vehicle and people movements that enter the dairy premises.

- All records of movements by date and time onto the premises should be maintained on the dairy premises and made available to animal health authorities in the event it is needed for a trace-back or trace-forward investigation.
- The milk hauler/driver must be prepared to provide the origin of tanker, driver name, contact number, vehicle identification, and previous and next stop (name and location).

4.2.2 In order to pick-up milk on a dairy premises, the performance standard is to provide a clean drive path for the milk tanker to approach the milk house (free of animal excrement).

4.2.2.1 The SMS Dairy Premises Working Group recommends that milk should not be picked up on dairy premises where milk trucks/tankers must drive across a visibly manure-contaminated cow path. If the cow path area cannot be effectively cleaned and disinfected prior to tanker transit of that area, an alternative route to pick up milk on farm should be pre-planned.

4.2.2.2 BEST PRACTICE: The milk tanker drive path is a hard/solid or well-drained gravel surface to minimize contamination of the transfer hose’s exterior and the milk hauler/driver’s footwear or clothing when they exit the cab.

4.2.3 Milk trucks/tankers carrying raw milk from other premises (multiple farm pickups or no CIP between loads); the performance standard is to minimize raw milk contamination of subsequent dairy premises.

4.2.3.1 Milk spills or leaks from dairies with infected but undetected cattle pose a risk of introducing FMD virus on subsequent premises. Follow the steps below to mitigate potential spills or leaks.

- The inlet valve on the tanker shall remain closed at all times except during pumping of milk.
- Pay close attention while loading milk and turn off the pump before reaching full tanker capacity to avoid overflow and milk escaping from the vent or manhole.
- Milk leaked/spilled onto porous surfaces (soil, mud, gravel or pitted concrete driveways) are difficult to clean and disinfect to inactivate the FMD virus making prevention steps critical.
- Milk leaked/spilled onto non-porous surfaces (stainless steel, sealed concrete – not pitted) must be cleaned and disinfected (see sections 7 and 8) to inactivate the FMD virus.
- Should large quantities of milk not originating from the current dairy premises leak or spill outside of the milk house, the hauler should alert the dairy premises personnel to clean and disinfect the area.

4.2.4 To mitigate the risk of bioaerosols escaping the air vent during milk pumping and transporting, the performance standard is to close and lock the dome lid (secured by the dog legs).

4.2.4.1 Follow state regulations that apply to venting of the tanker during pumping, including complete closure of the dome lid.

- Additional vents in the manhole cover and dome lid may be needed for adequate airflow.

4.3 Milk Samples

4.3.1 Milk sample vial(s) collected/picked up on farm; the performance standard is to ensure no visible contamination on the exterior of the disinfectable outer container (plastic sealable bag).

4.3.1.1. The labeled sample vials should be stored in a sealed plastic bag that has had the exterior sprayed with an approved disinfectant.

- Disinfectant must not come into contact with the milk or the interior or exterior of the vial.

4.3.1.2 The milk hauler/driver places the bagged sample collection vial(s) within the sample cooler (in a rack if possible) on the milk tanker for delivery to the dairy processing plant.

- Sample coolers must be made of a material that can be cleaned and disinfected.
 - Coolers visibly contaminated with milk, mud, or manure should be cleaned and disinfected at the processing plant.

5. CONTROLLING DAIRY PREMISES ACCESS: LINE OF SEPARATION (LOS) AND CONTROLLED ACCESS POINT(S)

5.1 Establishing a Line of Separation (LOS) and Controlled Access Point(s) on a Dairy Premises

The dairy premises should identify a line of separation (LOS) to separate off-farm traffic from on-farm movements of vehicles, people and animals and only allow access through controlled access point(s). One goal of the LOS is to limit direct (animal contact) and indirect (contaminated vehicles, footwear, equipment, run off) exposure of FMD virus to susceptible animals on the dairy premises. A second goal is to prevent movement of FMD virus off of a dairy premises that is infected but undetected. Crossing the LOS through a controlled access point requires that specific biosecurity practices are followed for all vehicles, personnel, and equipment. Once the LOS is established, it should not move unless areas which were outside of the LOS are decontaminated before being moved inside the LOS.

The LOS may be located along the property line or another boundary within the premises (for example, near or within the milk house). When determining the best location for the LOS, the following should be considered:

- Animal housing and holding areas

- Traffic on roadways outside the LOS could be carrying FMD virus in organic matter (mud, manure, run-off); ensure the LOS is located some distance from animal housing and holding areas so off-farm organic matter does not cross the LOS onto the farm.
- Animal movement patterns
- Drive path slope and ground topography (paved, gravel, dirt)
- Weather conditions (rain, snow, mud) effect on drive paths near controlled access point(s)
- Traffic patterns on and off of the dairy premises to select the fewest number of controlled access point(s)

Each controlled access point should be clearly marked with signs for all traffic entering the premises (e.g., vehicles, people, etc.). There should be a cleaning and disinfection (C&D) station for vehicles to cross at the controlled access point. Biosecurity protocols should be established for people crossing at the controlled access point. Ensure the controlled access point is not adjacent to animal holding or housing areas. The goal of the C&D station is to remove any material that may contain FMD virus from conveyances. This C&D station should be set up and operated by farm personnel. Training will be needed to ensure personnel are safely and effectively implementing the recommended protocols. The C&D station may be periodically monitored as determined by the Incident Management Team.

People crossing the controlled access point need to ensure they are not introducing FMD virus on their footwear, clothing, or hands. Each dairy premises should develop a farm-specific standard operating procedure that addresses the biosecurity performance standards that is acceptable to the decision makers in their state.

5.1.1 When determining the location(s) for the line of separation (LOS) and controlled access point(s), the performance standard is to establish a boundary that adequately separates off-farm movements from on-farm movements to prevent exposure of susceptible animals.

5.1.1.1 Set up temporary barriers (fence, gates, posts, ropes, etc.) designating the LOS that separates the milk tanker path from the rest of the farm.

5.1.1.2 Controlled access points should not be located in close proximity to animal housing areas due to the risk of run-off and splashing from the C&D station.

5.1.2 Dairy premises personnel crossing the LOS at the controlled access point(s); the performance standard is not to introduce to, or remove from, the dairy premises any item contaminated with animal manure/excrement.

5.1.2.1 Entering the dairy premises requires showing up to work having showered and wearing clothing and footwear that are clean (free of all animal manure/excrement) and have not been worn around livestock at other operations.

- Footwear worn outside the LOS must be cleaned and disinfected prior to entry. As an alternative, dedicated or disposable footwear worn only on the dairy premises can be put on when crossing the controlled access point.
- Clothing worn outside the LOS must be clean prior to entry. As an alternative, dedicated clothing worn only on the dairy premises can be put on when crossing the controlled access point.

5.1.2.2 Exiting the dairy premises requires leaving clothing and footwear worn around cattle on the operation unless it can be cleaned (free of all animal manure/excrement) and disinfected at the controlled access point.

- Footwear worn on the operation must be cleaned and disinfected prior to exit. As an alternative, dedicated or disposable footwear worn only on the dairy premises can be left on the operation prior to exit.
- Clothing worn on the operation must be clean prior to exit. As an alternative, dedicated clothing worn only on the dairy premises can be left on the operation prior to exit.

Multiple options exist for dairy premises to configure the LOS and milkhouse access for the milk truck/tanker and hauler/driver and are described next. The options are highly dependent on the dairy premises layout and have slightly different requirements and BPS associated with each approach. Appendices 2, 3 and 4 include illustrations (enlargements of image on right) and repeat the corresponding BPS for LOS for different dairy premises layouts described in this document.

[5.2 NOT crossing the LOS: Truck/Tanker/Hauler Collecting Milk \(Option 1\)](#) Found in Appendix 2

- Tanker, hauler and transfer hose do not cross the LOS (i.e., the milk house is “outside” of the LOS)
- Hauler/driver transporting direct load tankers
- Hauler enters the milk house to pump milk
 - Truck-mounted transfer hose
 - Farm-dedicated transfer hose



[5.3 Crossing the LOS: Only the Transfer Hose \(Option 2\)](#) Found in Appendix 3

- Truck/tanker and hauler/driver stay outside of the LOS
- Farm staff handles the hose on the milk house side of the LOS
 - Using farm-dedicated hose
 - Using truck-mounted hose

[5.4 Crossing the LOS: Milk Truck/Tanker, Hauler/Driver Exits Cab \(Option 3\)](#) Found in Appendix 4

- Truck/tanker, hauler/driver, and transfer hose cross the controlled access point onto the farm-side of the LOS to collect milk
 - Truck-mounted transfer hose

5.2 NOT Crossing the LOS: Truck/Tanker/Hauler Collecting Milk (Option 1)

Some farms may have a layout and a direct route to the milk house that would allow the milk tanker and hauler/driver to pick up milk without crossing the LOS. In this situation, the farm would establish its **milk house as outside the LOS** during milk collection and the hauler performs all milk collection activities. Dairy premises that utilize direct load tankers may also have a farm layout conducive to this approach. A critical control point for preventing FMD virus introduction to the herd is the door from the milk house into the milking parlor during milk collection. Dairy premises personnel are responsible for cleaning and disinfecting the milk house and equipment once the hauler leaves.

A brief checklist is provided in Appendix 2 to determine if a dairy premises can utilize this option. This option closely aligns with normal milk collection activities in a non-FMD outbreak situation. It also offers a solution to the weather challenges (severe wind, heavy rains causing mud, heavy snow, freezing temperatures, etc.) as well as locations faced with water shortages as the tanker would not be cleaned and disinfected at the dairy premises.

Appendix 2: BPS and Best Practices for Milk Collection when the Milk Truck/Tanker/Hauler do NOT Cross the LOS

- This appendix contains examples of farms where the inside of the milk house could be considered OUTSIDE the LOS. The door to the milk house is one critical control point for preventing FMD virus introduction to the herd.
- Haulers and farm personnel should follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described in this appendix to ensure FMD virus is not introduced or spread between dairy premises.
- Haulers should follow the PPE requirements described in section 9.2.

5.3 Crossing the LOS: Only the Transfer Hose (Option 2)

Some farms may have a layout and a direct route to the milk house that would allow the milk tanker and hauler/driver to pick up milk without crossing the LOS. In this situation, the farm would establish the **area just in front of the milk house as outside the LOS**. C&D of the tanker would not be required. One critical control point

for preventing FMD virus introduction to the herd is ensuring the transfer hose exterior has no visible contamination as it crosses the LOS at a controlled access point. Another critical control point is to ensure residual raw milk in a truck-mounted transfer hose is not deposited on subsequent dairy premises. The hauler/driver works with farm personnel to accomplish milk collection activities, each staying on their respective sides of the LOS.

A brief checklist is provided in Appendix 3 to determine if a dairy premises can utilize this option. This option requires meeting the State's requirements for a licensed weigher/sampler to perform milk collection duties and having a transfer hose long enough to reach from the bulk tank to the milk tanker through a controlled access point that does not exceed pump manufacturers recommendations. BPS are provided for using either a truck-mounted or a farm-dedicated transfer hose.

Appendix 3: BPS and Best Practices for Milk Collection when Only the Transfer Hose Crosses the LOS

- This appendix contains examples of farms where the area just outside the milk house is considered OUTSIDE the LOS and the milk house is INSIDE the LOS. A clean and disinfected transfer hose crossing the controlled access point is one critical control point for preventing FMD virus introduction to the herd. There are also specific BPS for farm personnel to follow to ensure FMD virus is not introduced or spread between dairy premises.
- Haulers and dairy premises personnel need to follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described in this appendix.
- Haulers should follow the PPE requirements described in section 9.2.

5.4 Crossing the LOS: Milk Truck/Tanker (Option 3a)

5.5 Crossing the LOS: Milk Hauler/Driver Exits the Cab (Option 3b)

Dairy premises that house or hold animals near the milk truck/tanker drive path to the milk house should establish their LOS at some distance from these animals. There are three critical control points for preventing FMD virus introduction to the herd in this situation:

- Milk truck/tanker is cleaned and disinfected (C&D) prior to crossing the controlled access point at the LOS
- Milk hauler/driver exiting the cab to collect milk does not contact people, animals, milk fed to susceptible animals, and wears proper PPE
 - Another option: Haulers/drivers do not exit the cab
- Truck-mounted transfer hose is handled to prevent depositing raw milk and environmental contamination from previous farm pickups onto the dairy premises
 - Another option: Use a farm-dedicated transfer hose.

Dairy premises need to follow their State's requirements to have a licensed weigher/sampler on farm to complete all the steps necessary to collect milk for situations where the hauler does not exit the cab. The BPS for haulers that exit the cab is presented in section 5.5. Dairy premises with direct-load tankers should ensure their personnel are trained in tractor-trailer connections and covered under insurance to perform these duties.

Appendix 4: BPS and Best Practices for Milk Collection when Milk Truck/Tanker and Hauler/Driver Crosses the LOS

- This appendix contains examples of farms where the drive path to the milk house requires the milk truck/tanker to pass by susceptible animals and the LOS is at some distance from the animals. There are also specific BPS for farm personnel to follow to ensure FMD virus is not introduced or spread between dairy premises.
- Haulers and dairy premises personnel need to follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described in this appendix.
- Haulers should follow the PPE requirements described in section 9.2.

6. OFF-LOADING RAW MILK AT A DAIRY PROCESSING PLANT

Milk processing plants are a commingling location for raw milk trucks/tankers, employee vehicles, and vehicles bringing supplies and taking away finished products. These vehicles and their drivers may be carrying FMD virus on their equipment, clothing, and footwear. There are no susceptible animals on the same premises as the processing plant, so the risk of FMD introduction and spread to livestock at these locations is low. However, the plant is an area where cross-contamination of vehicles and drivers can occur from milk trucks/tankers that have picked-up milk on infected, but not yet detected farms or have become externally contaminated during transit. These vehicles and drivers do present a moderate to high risk for transferring contaminated environmental media or milk to other vehicles.

Plant employees that care for or have susceptible animals at home need to take precautions to prevent transporting FMD virus on vehicles, clothing, and footwear. BPS are described to minimize the risk of plant employees transporting FMD virus to susceptible animals.

The ability to C&D trucks/tankers at the processing plant will be affected by location, water availability, regulations for waste water, and climate differences. In an FMD outbreak, steps taken by all industry partners to reduce the infectious burden of FMD virus in the environment, on trucks/tankers, roadways, and commingling locations will contribute to the overall success of controlling this highly contagious disease. Therefore, best practices are described aimed at decreasing the infectious burden. Processing plants and animal health officials are encouraged to work together to determine the best options that reduce FMD virus spread and aligns with local capabilities and regulations.

6.1 Establishing Traffic Patterns on the Processing Plant Premises

Traffic patterns for raw milk trucks/tankers and all other vehicles should be established to minimize cross-contamination while on the plant premises. All traffic involved in raw milk movement (e.g., vehicles, people, etc.) should be limited to a designated entry at the processing plant. If possible, separate entrances should be established for all other vehicles (finished product, employees, supplies, etc.) to minimize cross-contamination of raw milk trucks/tankers that may travel to or near dairy premises with susceptible animals.

Only the licensed milk hauler/driver is allowed to be in the cab as it enters the processing plant premises. Raw milk trucks/tankers entering a processing plant premises should follow specific biosecurity practices.

6.1.1 Before entry, the performance standard is for dairy plant personnel to record all vehicle and people movements involving raw dairy products.

- The milk hauler/driver must be prepared to provide date, time of arrival and departure, origin of tanker, driver name, contact number, vehicle identification, and dairies from which milk was collected from prior to arrival at the plant (names and locations).
- All records of vehicle and people movements onto the processing plant premises should be maintained and made available to animal health authorities in the event it is needed for a trace back or trace forward investigation.

6.1.2 Whenever possible, the performance standard is for the milk hauler/driver to remain in the cab until the processing plant personnel have cleared the tanker for off-loading.

- If the milk hauler/driver must exit the cab for any reason, follow protocols under section 4.1.2.

6.1.3 Trucks/tankers should be inspected for evidence of milk leakage upon entry; the performance standard is for dairy plant personnel to look for visible milk on the tanker exterior and in the storage compartment and notify the driver.

- If noted, the cause should be resolved prior to future transport by that driver or tanker to minimize raw milk leakage at subsequent pickups on dairy premises.
- Residual milk on the exterior and within the storage compartment should be removed through the cleaning process, prior to picking up milk on a dairy premises.

6.2 Raw Milk Tanker Exterior Cleaning and Disinfection

Conducting C&D of raw milk trucks/tankers at the processing plant is one additional step toward reducing the infectious burden of FMD virus in the environment, especially when tanker C&D cannot be accomplished on the dairy premises during raw milk collection.

6.2.1 The performance standard is for processing plant officials and animal health officials to work together to determine the best options for tanker C&D to reduce FMD virus spread that aligns with response goals, local capabilities and regulations.

6.2.1.1 BEST PRACTICE: Raw milk trucks/tankers should have their exterior surfaces, tires, undercarriage, and storage compartment cleaned and disinfected with the goal of removing any material that may contain FMD virus from conveyances before picking up milk at subsequent dairy premises with susceptible animals.

- Adhering to plant established traffic patterns is also essential to ensure organic material is not picked up on the plant premises before the raw milk tanker leaves.
- The location of the C&D station(s) could be at one or more of the following areas and meet the above goal:
 - a. Before or upon entry to the processing plant premises
 - b. Within the milk receiving bay
 - c. Before leaving the plant premises
 - d. At an approved off-site location

6.2.1.2 Plant mitigation plans should describe the location, personnel and equipment needed to operate a C&D station for conveyances entering their premises.

- The area where the tanker is cleaned and disinfected should be free of dirt/mud (ideally on a hard/solid or well-drained gravel surface).
- The milk hauler/driver should remain in the cab of the milk tanker.
 - a. If the milk hauler/driver must exit the cab for any reason, follow protocols under section 4.1.2
- Training will be needed to ensure personnel are safely and effectively implementing the recommended protocols.
- The C&D station will be periodically monitored as determined by the Incident Management Team.

6.2.1.3 The milk tanker should be cleaned as described in section 7 (focusing on the tires, wheel wells, undercarriage, mud flaps, splash guards, steps, storage compartment) to remove visible contamination.

- Use the least amount of water necessary.
- Run-off/effluent from the C&D station must be managed such that it does not come in contact with susceptible animals and waterways (including ditches, streams, wetlands) and meets all applicable state, local and municipality regulations.

6.2.1.4 The milk tanker should be properly disinfected with an approved disinfectant that is applied for the recommended wet contact time per label directions.

- EPA-approved disinfectants against FMD virus can be found in section 8.

6.3 Milk Haulers/Drivers at the Processing Plant

6.3.1 Exiting the cab of the tanker, the performance standard is to prevent raw milk from contacting exposed skin, street clothing, and footwear.

6.3.1.1 The tanker cab should be considered and maintained as a clean, non-contaminated zone.

- The cab door should be considered a “Vehicle Door Boundary” between the cab and potentially contaminated outside areas.

- Adequate supplies of clean gloves, protective outerwear and footwear for a full shift of milk collection and delivery should be kept in the cab.
- Processing plants should keep a supply of protective wear (boots, gloves) in the event the hauler's supply becomes depleted, damaged, or excessively contaminated.

6.3.1.2 If milk haulers/drivers are not involved in milk unloading procedures. They should put on protective footwear, at a minimum, prior to exiting the cab.

6.3.1.3 If on farm bulk tank samples were collected, the hauler should wear gloves and provide the previously disinfected, sealed bag(s) to designated plant personnel or drop-off locations.

6.3.2 Exiting the cab of the tanker, the performance standard is no direct contact with other personnel.

6.3.2.1 Haulers NOT responsible for tasks involving raw milk contact (off-loading or cleaning pumps/hoses/collection equipment), should go directly to and remain in, the designated area (break room).

- Haulers should have no direct contact with processing plant personnel, other haulers/drivers, raw milk handling equipment, or other milk transport vehicles.
- Haulers should not enter the milk processing area.
- Haulers should adhere to all plant protocols designating foot traffic and use of facilities.

6.3.3 Returning to the cab of the tanker, the performance standard is removal of all protective gloves and footwear.

6.3.3.1 The tanker cab should be maintained as a clean, non-contaminated zone which requires removing disposable protective outer clothing, footwear and gloves or clean and disinfect waterproof gear and footwear prior to entry.

6.4 Personnel Involved in Raw Milk Receiving

6.4.1 Plant personnel or haulers responsible for tasks involving raw milk contact (collecting tanker sample for antibiotic screening, off-loading/assisting with off-loading/cleaning pumps, hoses, and collection equipment, working in the lab), the performance standard is to prevent raw milk on their clothing and footwear from leaving the designated raw milk handling areas of the plant.

6.4.1.1 Cross-contamination of raw milk with finished product should be avoided by designating areas specific to personnel handling raw milk.

- Gloves, clothing or protective outerwear/footwear worn while handling raw milk should not be worn in areas of the plant where pasteurized milk or milk products are processed, handled, or stored.
 - This includes lab personnel testing raw milk samples.
- If not already part of the plant's operating protocol, a boot bath, with product effective at killing FMDv, should be placed between the receiving room and the milk processing section of the plant.
 - All personnel crossing between the areas must use the boot bath.
 - The boot bath must be kept free of organic debris and the disinfectant solution changed frequently to remain effective.
- Raw milk samples/paperwork, etc. should be moved from the receiving area in a manner that prevents the raw milk receiver from entering the processing plant.

6.4.1.2 Clothing or protective outerwear/footwear worn while handling raw milk should not leave the plant premises without cleaning and disinfection to minimize the potential for transporting FMD virus from the plant to premises with cloven-hooved livestock.

- This could be accomplished through dedicated work clothes and footwear that remains, and is laundered, at the plant.

6.4.1.3 All employees who have contact with cloven-hooved livestock (cattle, sheep, goats, or pigs), should arrive at work showered, in clean street clothes and footwear, prior to changing into their plant-issued clothing and footwear.

6.4.1.4 PPE protocols for raw milk handling is presented in section 9.3.

6.4.2 When collecting tanker samples, the performance standard is to not spill milk on the outside of the tanker.

6.4.2.1 A collection bucket should be used for the disposal of the first two milk samples collected. The bucket and contents can be disinfected and neutralized prior to disposal into the sanitary sewer.

- Sample collection areas and equipment should be cleaned and disinfected in between each tanker with a food grade disinfectant that is effective against FMD (see section 8).

6.4.3 During off-loading milk, the performance standard is to address raw milk spills immediately.

6.4.3.1 Raw milk spilled on the floor or ground during the connection/disconnection of the plant transfer hose(s) should be rinsed into the drain as soon as all connections are made and before personnel walk through the area.

6.4.4 After off-loading milk, the performance standard is to ensure no residual raw milk in the tanker and hose leaks upon leaving the processing plant.

6.4.4.1 After off-loading of milk is complete, the storage compartment and/or valve area should be rinsed off prior to sealing all access points on the tanker.

- All equipment on the tanker, including valves and fittings, must be maintained in good repair to prevent leakage of milk from these points on the tanker.
- After milk off-loading is complete and the inlet valve is closed, any milk spilled around the valve or within the storage compartment should be cleaned and the surfaces disinfected immediately prior to replacing dust cap or closing the storage compartment doors.

6.4.4.2 The Pasteurized Milk Ordinance (PMO) requires CIP of milk trucks/tankers once every 24 hour period when in use.

- Evidence for internal tanker cleaning is monitored by seals on all access points and a wash tag identifying time/place of last interior tanker cleaning.
- Complete CIP of the tanker after each off-load may not be possible in many situations (lack of CIP equipment, lack of waste water permits, lack of off-loading capacity for incoming loads, etc.).
- A sanitary rinse may not be possible due to the lack of a permit for waste water disposal.

6.4.4.3. It is critical that all access points to raw milk on the tanker be completely sealed to prevent leaking whether CIP is conducted or not.

6.4.4.4 The truck-mounted transfer hose should be cleaned internally and externally using the CIP or COP equipment at the plant prior to placing it in the cleaned storage compartment.

- If the plant does not have CIP or COP capabilities, the interior and exterior surfaces of the hose should be rinsed with potable water until the discharge running into the drain is clean and clear

6.4.4.5 Once the tanker is unloaded and has no visible contamination on its exterior or in the storage compartment, it should be eligible for movement to the next location.

- The next location could be an off-site CIP facility or another dairy premises for raw milk pick-up.

7. CLEANING AND DISINFECTING VEHICLES

The virus that causes FMD has been shown to be stable in the environment and in organic material (mud, manure, feed, and bedding). Virus stability increases at lower temperatures and with protection from sunlight. FMD virus is inactivated at pH below 6.5 or above 11. Effective disinfectants for hard, nonporous surfaces only are listed in section 8. Proper cleaning procedures are essential in order for the disinfectant to adequately contact the virus and have time to inactivate it.

7.1 Proper Cleaning Procedures for Vehicles

7.1.1 *Wear personal protective equipment*

7.1.1.1 Gloves, coveralls, rubber or disposable boots, and goggles and a mask if you are generating splashes (eye protection) or dust (respiratory protection). See section 9.4 for more details.

7.1.2 *Soak the most visibly contaminated areas to aid in washing*

7.1.2.1 Soak the area with water and a detergent or cleaning agent (soap) starting with the dirtiest area and working toward the cleaner areas.

- This will aid in the removal of organic material on the tires, wheel wells, undercarriage, mud flaps, splash guards, and steps.
- May need to drive the vehicle forward slightly to ensure the tire contact surface is soaked.

7.1.3 *Wash*

7.1.3.1 Wipe, spray or scrub the area, starting with the dirtiest and working towards the cleaner areas.

- The use of pressure washers can enhance organic matter removal on the tires, wheel wells, undercarriage, mud flaps, splash guards, and steps.
- Ensure that the spray and wash water run-off from the vehicle wash does NOT reach animal holding/housing areas as FMD virus in organic matter could result in animal exposure.
- Washing the dirtier areas may cause splatter onto the cleaner areas; hence starting with the dirtiest areas will allow removal there first and subsequent removal of splatter from the cleaner areas last.
- Field demonstrations on full-sized milk tankers used 50-60 gallons of water, 15-20 gallons of citric acid and took approximately 30 minutes to fully clean and disinfect.

7.1.4 *Rinse*

7.1.4.1 Remove all detergent/soap residues by applying a low pressure water rinse on all surfaces, starting with the top of the tanker and working down.

7.2 Proper Disinfection Procedures for Vehicles

7.2.1 *Read the product label*

7.2.1.1 Handle the solution correctly to ensure safety of the handler and effectiveness of the disinfectant.

- Personal protective equipment may be needed to mix up solutions.
- Note the recommended dilutions, water temperature, environmental temperature, and the need for ventilation when using the product.

7.2.2 *Disinfect*

7.2.2.1 Apply the product to the cleaned areas of the vehicle, starting with the tires to maximize contact time before moving.

- Vehicle can be slowly rolled forward to allow the disinfectant to contact all parts of the tires.

7.2.2.2 Allow the product adequate wet contact time (per label directions) with all surfaces to inactivate the virus. Solution must remain ‘wet’ to actively work; reapplication may be necessary.

8. APPROVED DISINFECTANTS FOR FMD VIRUS

In the U.S., the Environmental Protection Agency (EPA) regulates disinfectants (referred to as antimicrobial pesticides) under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). This law requires that all label use directions and safety precautions be followed. The labeling for each EPA-registered disinfectant lists the disease agents it effectively inactivates. In the case of the foot and mouth disease (FMD) virus, there are only a few labeled products and only one is registered as a sanitizer on food contact surfaces. In emergencies, when EPA registered products may not be available, EPA may grant exemptions for unregistered uses of registered pesticides, or uses of unregistered pesticides, to USDA-APHIS personnel, State Departments of Agriculture personnel, or possibly farmers or individuals to use a specific pesticide for a limited time by designated personnel. USDA-APHIS has exemptions in place for the use of citric acid and sodium hypochlorite (bleach), against the FMD virus in the event that registered pesticides are not available during an outbreak.

8.1 Safety

Follow all safety precautions and use directions listed on the product label during the handling and mixing of disinfectant solutions. Wear eye and respiratory protection when mixing or spraying disinfectants. Wear gloves to avoid skin contact with caustic materials. Immediately wash off any disinfectant that contacts bare skin.

8.2 Contact Time

Before disinfecting, all surfaces must be cleaned (see section 7). Disinfectants will not be effective unless the surface they are applied to remains visibly wet for the required period of time. Read label directions for this contact time. Disinfectants mixed with water are susceptible to evaporation in hot or windy conditions and in direct sunlight and thus will not be completely effective unless reapplied. Curved surfaces that cause disinfectants to run off (like milk trucks/tankers) may require reapplication to keep the surface wet for the required contact time. Since disinfectants, climates, and environmental regulations vary, work with the animal health authority for specific recommendations. Dairy equipment can be damaged by inappropriate uses of disinfectants, so proper use is critical to destroying the virus while maintaining the equipment.

8.3 Proprietary Products

EPA registered products with a label claim to inactivate FMD virus are listed in Table 1. Any of these products may be selected and used according to their labels. For more detailed information about available products, refer to the official label currently filed by the EPA by searching (product name or registration number) on the U.S. EPA Pesticide Product Label Search website at <http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1:1719419566286576>.

Table 1. Pesticide Products Approved by EPA For Use Against FMDv

EPA Reg. No.	Product Name	Company	Active ingredient(s)	Use sites
1677-129	Oxonia Active *Alternate name Oxysept 333 appears on label that lists FMDv	Ecolab, Inc.	Hydrogen peroxide Peroxyacetic acid	Foot and mouth disease virus in/on livestock barns, livestock premises, animal quarters, animal cages animal feeding/watering equipment, milking equipment, dairy equipment, and agricultural premises
6836-86	Lonza DC 101	Lonza, Inc.	Alkyl dimethyl benzyl ammonium chloride Didecyl dimethyl ammonium chloride Octyl decyl dimethyl ammonium chloride	Foot and mouth disease virus in/on livestock premises, livestock feeding and watering equipment, and livestock equipment

EPA Reg. No.	Product Name	Company	Active ingredient(s)	Use sites
			Dioctyl dimethyl ammonium chloride	
10324-67	Maquat MQ615-AS	Mason Chemical Company	Alkyl dimethyl benzyl ammonium chloride Didecyl Dimethyl Ammonium Chloride Octyl Decyl Dimethyl Ammonium Chloride Dioctyl Dimethyl Ammonium Chloride	Foot and mouth disease virus in/on livestock premises, livestock feeding and watering equipment, livestock equipment, livestock transportation vehicles, hog farrowing houses, hog barns/houses/parlors/pens, farrowing equipment, animal feeding and watering equipment, animal equipment, animal transportation vehicles, and shoe baths
70060-19	Aseptrol S10-TAB	BASF Catalysts, LLC	Sodium chlorite Sodium dichloroisocyanurate dihydrate	Foot and mouth disease virus in/on animal cages, animal stables, animal feeding/watering equipment, animal equipment, and animal transportation vehicles
70060-30	Aseptrol FC-TAB	BASF Catalysts, LLC	Sodium chlorite Sodium dichloroisocyanurate dihydrate	Foot and mouth disease virus in/on livestock premises, livestock feeding equipment, livestock watering equipment, livestock equipment, livestock transportation equipment, animal quarters, animal cages, animal feeding and watering equipment, animal equipment, animal transportation vehicles, and shoe baths
71654-6	Virkon S	The Chemours Company FC, LLC	Sodium chloride Potassium peroxymonosulfate	Foot and mouth disease virus in/on animal feed equipment, livestock barns, livestock pens, livestock stalls, livestock stables, livestock equipment, cattle feedlot, hog farrowing pen premises, hog barns/houses/parlors/pens, animal quarters, animal feeding and watering equipment, animal equipment, agricultural premises, agricultural equipment, animal transportation vehicles, and human footwear
74559-4	ACCEL (Concentrate) Disinfectant Cleaner *Alternate name INTERVENTion Farm Animal Care Disinfectant Cleaner & Deodorizer appears on label that lists FMDv	Virox Technologies	Hydrogen peroxide	Foot and mouth disease virus in/on animal premises, animal housing facilities, farm premises, equine production, boot and shoe wash, vehicles, facilities used for temporary confinement of animals (based on May 2017 label)

Source of Table 1: Pesticides to use against selected foreign animal diseases, July 2017 at https://www.aphis.usda.gov/animal_health/emergency_management/downloads/fad_epa_disinfectants.pdf

8.4 Exemptions for Use of Registered Products

USDA-APHIS has an exemption in place for the use of citric acid and sodium hypochlorite (bleach) against FMD virus in the event the proprietary products are not available. As with all disinfectants, all label use directions and safety precautions must be followed. For more information, see:

https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_disinfectants.

8.4.1 Citric acid (99% food grade anhydrous granular or powder)

A 3% solution is made by adding 4 ounces of citric acid powder to 1 gallon of water (or 30 grams to 1 liter of water). For larger batches (50 gallons), add 13 pounds of citric acid powder to 48.5 gallons of water. Mix thoroughly.

- Recommended wet contact time
 - 30 minutes for porous surfaces (wood, asphalt, and pervious concrete)
 - 15 minutes for non-porous surfaces (metal, plastic, glass and any painted or sealed material)
- The solution must be mixed fresh daily and is corrosive.
- The solution must not be mixed or used with bleach, chlorinated products, or mildew stain removers.
- Citric acid solution can be used on food and nonfood contact surfaces.
 - USDA-APHIS has an exemption for use of citric acid against FMD virus by USDA APHIS personnel, any State Departments of Agriculture personnel, farmers, and any other individuals who need to use this disinfectant on surfaces potentially exposed to FMD (EPA Quarantine Exemption issued to USDA, February 2016).
- A 3% solution is VERY corrosive and causes irreversible eye damage. Avoid contact with eyes, exposed skin, and clothing. Personal protective equipment is recommended to protect from dermal and inhalation exposure. Read and follow all label recommendations.
- The citric acid section 18 exemption label contains additional information for personal protection, first aid, and proper disposal and can be found at:
https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_disinfectants

8.4.2 Sodium hypochlorite 5.25%, 8.25% or 12% (concentrated household bleach)

To make a 0.3% sodium hypochlorite solution (3,000 ppm available chlorine), add:

- 1 part 5.25% sodium hypochlorite product to 16.5 parts water
- 1 part 8.25% sodium hypochlorite product to 26.5 parts water
- 1 part 12.0% sodium hypochlorite product to 39 parts water
 - NEVER add water to sodium hypochlorite
 - USDA-APHIS has an exemption for use of sodium hypochlorite against FMD virus by USDA APHIS personnel, any State Departments of Agriculture personnel, farmers, and any other individuals who need to use this disinfectant on surfaces potentially exposed to FMD (EPA Quarantine Exemption issued to USDA, September 2015, Amended June 2017).

Recommended wet contact time:

- 30 minutes for porous surfaces (wood, asphalt, and pervious concrete), reapplying solution when necessary. Rewet with a minimum of two applications with at least 15 minutes between the first and last application.
- 15 minutes for non-porous surfaces (metal, plastic, glass and any painted or sealed material), reapplying solution when necessary.
- The solution must be mixed fresh and is corrosive.
- No treatments are permitted on food or feed items or where food or feed are present.
- Personal protective equipment is recommended to protect from dermal and inhalation exposure.
- A 0.3% solution is VERY corrosive and may cause severe damage to exposed skin and eyes. Personal protective equipment is recommended to protect from dermal and inhalation exposure. Read and follow all label recommendations.

- The sodium hypochlorite section 18 exemption label contains additional information for personal protection, first aid, and proper disposal and can be found at: https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/emergency-management/ct_disinfectants

9. PERSONAL PROTECTIVE EQUIPMENT (PPE)

PPE is one of many tools that can be implemented to decrease the risk of spreading FMD virus between animals and locations by human activities. Wherever possible, best practices should be implemented to further limit virus spread. PPE is designed to prevent spillage onto, and contamination of skin, street clothing and boots by materials (raw milk, manure, and mud) that could contain FMD virus. The type of PPE that will be worn is determined by the activities performed by personnel at C&D stations and involved in raw milk transfer.

9.1 Importance of PPE during an FMD Outbreak

- Personnel that need to wear PPE during an FMD outbreak will benefit from pre-event education, training, and practice to increase their competencies and most effectively limit virus spread. Topics to cover include:
 - Proper donning
 - Performing tasks while wearing PPE
 - Precautions while wearing PPE for long periods of time
 - Doffing to limit contamination of street clothes
 - Proper disposal of PPE
- Personnel involved in cleaning and disinfecting (C&D) vehicles need to protect their street clothing and footwear from virus contamination during the cleaning process and their exposed skin, eyes, nose, and mouth from the disinfectant.
- Dairy premises personnel need to ensure the clothing/footwear or PPE worn on farm around animals remains on the farm.
- This can be accomplished by using farm-dedicated clothing and footwear or wearing PPE when on the dairy premises and leaving it on the farm.
- Milk haulers involved in raw milk transfer should carry at least one change of street clothes with them in the event raw milk contacts their clothing.
- Milk haulers should not wear their street clothes or footwear around susceptible livestock after their raw milk pickup routes.
- Dairy processing plant personnel involved in raw milk transfer should change their clothing and footwear before leaving the plant.
- Protective clothing, uniforms, etc. worn while transferring raw milk should be laundered at the processing plant.
- If on-site laundering is not possible, clothing that leaves the plant should not be around susceptible animals.

9.2 PPE for Haulers/Drivers that Exit the Cab

Haulers/Drivers that exit the cab should focus on keeping their street clothing, hands, and footwear free of visible contamination. When exiting the cab, boots or disinfectable shoe covers should be worn. If handling the raw milk-transfer hose, gloves should also be worn. As a best practice, protective outerwear should be worn over street clothes since milk spray during transfer hose connection can occur. As an alternative to routine use of full protective outerwear, a change of street clothes should be carried in the event a hauler/driver's street clothes become dampened with raw milk. The goal is to not transfer raw milk on clothing from farm to farm. The soiled clothes should be enclosed in a garbage bag until they can be laundered.

Milk haulers/drivers should carry adequate supplies of PPE in the tanker cab for a full shift of milk collection and delivery within an FMD Control Area. Dairy premises and milk processing plants should keep a supply of PPE (gloves, disposable boots) in the event the hauler's supply becomes depleted, damaged, or excessively contaminated.

9.2.1 PPE Supplies for Haulers/Drivers that Exit the Cab

- Gloves
 - Disposable
 - At least 2 pair for every dairy premises visit
- Protective footwear
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - Footwear should cover shoes and socks
- Change of street clothes
 - In the event raw milk sprays onto street clothing, at least one change of clothes should be carried in the cab
- Garbage bag that can be closed
 - Contaminated street clothes should be kept in a closable garbage bag and not opened until deposited into a washing machine
- Protective outerwear
 - Disposable or waterproof* to withstand washing and disinfection while being worn
 - Covers street clothing
 - Apron or rain coat that remains on farm and dedicated to the hauler is an option
 - Must be stored in such a way it does not become contaminated with raw milk, animal manure, or mud
- *Protective eyewear (goggles, face shield)
 - b. If wearing waterproof outerwear that will be disinfected while still worn to prevent splashes of disinfectant into the eyes

9.2.2 Donning PPE for Haulers/Drivers that Exit the Cab

9.2.2.1 The cab door should be considered a “Vehicle Door Boundary” between the cab and potentially contaminated outside areas.

- Put on single use disposable gloves
- BEST PRACTICE: Put on protective outerwear, at least to the waist if wearing full coveralls (unless farm supplies apron, rain coat)
- Put on protective footwear
 - If disposable outerwear is worn, the pant legs of the protective outerwear should be tucked into the protective footwear.
 - If waterproof outerwear is worn, the pant legs should go over the boots, but not touch the ground. This will allow water and disinfectant to remain on the outside of the protective footwear.
- BEST PRACTICE: Step out of the cab and pull the outerwear on the rest of the way then zip closed

9.2.3 Doffing PPE for Haulers/Drivers that Exit the Cab

9.2.3.1 The cab door should be considered a “Vehicle Door Boundary” between the cab and potentially contaminated outside areas.

- If worn, remove farm-dedicated apron or rain coat after disconnecting and storing transfer hose
 - Return to storage area in milk house
- Remove outerwear unless waterproof*
- Remove gloves
- Remove protective footwear unless waterproof**
- Disposable outerwear, gloves, and footwear should be disposed of in a manner that does not contaminate personnel, equipment, or expose susceptible animals
- Get immediately into the cab trying not to introduce any visible contamination on your street shoes or clothing

- *Waterproof protective outerwear that travels with hauler:
 - Put on protective eyewear to prevent splashing disinfectant into eyes upon decontamination
 - Spray approved disinfectant from top to bottom so that it contacts all potentially contaminated surfaces of the outerwear, gloves, and footwear
 - Ensure the disinfectant meets the recommended wet contact time
 - Reapply if the disinfectant dries before the contact time is achieved
 - Remove protective eyewear and disinfect any surfaces that contacted raw milk
 - Store in tanker cab
 - Remove gloves and dispose of on the dairy premises in an appropriate manner.
 - Outerwear and footwear may remain on the milk hauler or be removed and stored in the cab
- **Waterproof protective footwear should be cleaned and disinfected before removal and stored so that it does not contaminate the cab of the truck

9.3 PPE for Dairy Premises Personnel C&D the Milk House after Hauler Collects Milk

Personnel need to wear protective gear that protects their street clothes/footwear, eyes, and face from environmental contamination, washing procedures, and disinfectant sprays. The PPE worn while cleaning and disinfecting the milk house after the hauler has collected milk should not be worn or stored around animals or animal areas. Carefully read the disinfectant label and follow their recommendations for PPE. When not in use, PPE needs to be stored in an area that prevents it from getting wet or sprayed with disinfectant and prevents contamination with organic material.

9.3.1 PPE Supplies for C&D the Milk House

- Gloves
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - At least 2 pair for every C&D session
- Clean street clothing
 - There should be no animal manure/excrement on street clothing as PPE will be contaminated
- Protective outerwear
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - Fully cover clean street clothing
 - Dedicated to this task; should not be worn around animals or animal areas
- Protective footwear
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - They should cover the shoes and socks
 - Dedicated to this task; should not be worn around animals or animal areas
- Designated disposal bin or storage area for used PPE

9.3.2 Donning PPE for C&D the Milk House

- Put on gloves
- Put on protective outerwear over clean street clothing
- Put on protective footwear
 - If disposable outerwear is worn, the pant legs of the protective outerwear should be tucked into the protective footwear.
 - If waterproof outerwear is worn, the pant legs should go over the boots, but not touch the ground. This will allow water and disinfectant to remain on the outside of the protective footwear.

9.2.3 Doffing PPE for C&D the Milk House

- Remove outerwear unless waterproof*
 - *Put on protective eyewear to prevent splashing disinfectant into eyes upon decontamination

- *Spray approved disinfectant from top to bottom so that it contacts all potentially contaminated surfaces of the outerwear, gloves, and footwear
- Ensure the disinfectant meets the recommended wet contact time
 - Reapply if the disinfectant dries before the contact time is achieved
- *Remove protective eyewear
- Remove gloves
- Remove protective footwear unless waterproof**
 - **Clean and disinfect before removal and stored so that it does not become contaminated
- Disposable outerwear, gloves, and footwear should be disposed of in a manner that does not contaminate personnel, equipment, or expose susceptible animals

9.4 PPE for Personnel Involved in Raw Milk Handling at the Dairy Processing Plant

Dairy processing plant personnel need to ensure the clothing/footwear worn while handling raw milk does not leave the plant. This can be accomplished by plant-dedicated clothing and footwear or wearing PPE while at the dairy processing plant and leaving it there.

If the milk hauler is responsible for off-loading milk, protective gear should be worn. Follow donning and doffing protocols provided in sections 9.2.2 and 9.2.3.

9.4.1 PPE Supplies for Raw Milk Handling at the Dairy Processing Plant

- Gloves
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - At least 2 pair for every tanker off-load at the processing plant
- Plant dedicated clothing – OR –
- Protective outerwear
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - Cover exposed street clothing
- Plant dedicated footwear – OR –
- Protective footwear
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - They should cover the shoes and socks
- Designated disposal bin for used PPE

9.5 PPE for C&D Stations

Personnel need to wear protective gear that protects their street clothes/footwear, eyes, and face from environmental contamination, washing procedures, and disinfectant sprays. Carefully read the disinfectant label and follow their recommendations for PPE. When not in use, PPE needs to be stored in an area that prevents it from getting wet or sprayed with disinfectant and prevents contamination with organic material.

9.5.1 Supplies for C&D Station

- Read the disinfectant label for specific PPE recommendations.
- Gloves
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - A 4-day supply for the C&D station; at least 2 pair for every person involved and for each vehicle cleaned and disinfected
- Protective outerwear
 - Water resistant (disposable) or waterproof to withstand washing and disinfection while being worn
 - The protective outerwear should cover street clothing, exposed skin, including neck and head
 - A 4-day supply; at least one pair dedicated to C&D for every person involved
- Protective eyewear (goggles, face shield)

- At least one pair dedicated to the C&D station for every person involved
- Nose/mouth protection (face shield or facemask)
 - At least one dedicated to the C&D station for every person involved
- Protective footwear
 - Disposable or waterproof to withstand washing and disinfection while being worn
 - It should cover the shoes and socks
- Wide waterproof tape
- Biohazard bags or other receptacle for properly disposing of PPE

9.5.2 Personnel involved in Vehicle C&D: Donning PPE

- Inspect all protective gear for damage or contamination; do not use unless intact, clean
- Protective outerwear should completely cover all street clothes and exposed skin, including neck and head
- Gloves should not be open around the wrists
 - Cover with protective outerwear or
 - Seal with tape to prevent disinfectant running inside
- Protective footwear should not be open at the top
 - Cover with protective outerwear or
 - Seal with tape to prevent water, disinfectant running down the pant leg inside the footwear
- Protective eyewear straps should go over the hooded outerwear
 - Mouth and nose protection straps should go over the hooded outerwear

9.5.3 Personnel involved in Vehicle C&D: Doffing PPE

9.5.3.1 Disposable:

- Remove tape from top of boots and dispose of in PPE trash receptacle
- Unzip the protective outerwear
- Pull the protective outerwear off the shoulders touching the outside with gloves on
 - A buddy system works best – have a second person wearing gloves pull the outerwear down off the shoulders while standing behind you
 - If alone, grab the outerwear on each side above the waist and wiggle the shoulders free
- Remove the gloves and dispose of in provided receptacle
- Touching only the inside of the protective outerwear so as not to contaminate hands, peel the outerwear down to boot level
- Sitting on a stool or other support, peel the outerwear and boots off the rest of the way
- Outerwear and footwear should be disposed of in a manner that does not contaminate personnel, equipment, or expose susceptible animals
- On a dairy premises: Additional biosecurity steps should be followed for personnel to cross the LOS at a controlled access point that eliminates any visible contamination on street shoes

9.5.3.2 Waterproof:

- Water rinse off protective gear from top to bottom to remove any potential contamination from outerwear, gloves, and footwear
- Remove protective eyewear and store in a protected location
- Remove gloves
 - If reusable, store in a protected location or
 - Dispose of in an approved receptacle
- Remove protective outerwear, protective footwear
 - Store in a protected location near the C&D station to be worn upon next vehicle C&D

- On a dairy premises: Additional biosecurity steps should be followed for personnel to cross the LOS at a controlled access point that eliminates any visible contamination on street shoes

9.5.4 Precautions While Wearing PPE at the C&D Station

9.5.4.1 The buddy system (two people) works best when donning and doffing PPE, as well as monitoring each other for signs of heat-related illness, fatigue, or injury.

- The second person also aids in ensuring street clothes are not contaminated should the PPE fail or become damaged.
- At a minimum, another person should be aware of the presence of personnel in PPE on the dairy premises or processing plant to provide assistance if needed.

9.5.4.2 Wearing PPE can affect a person's mobility and response time/movements due to its coverage.

- Personnel wearing PPE should be aware of certain situations and take precautions to limit environmental or situational impacts. Additional details are available in the
 - USDA FAD-PreP/NAHEMS Guidelines: Personal Protective Equipment (2011), available at: <http://www.cfsph.iastate.edu/pdf/fad-prep-nahems-guidelines-ppe-personal-protective-equipment>
 - USDA FAD-PreP/NAHEMS Guidelines: Health and Safety (2011), available at: <http://www.cfsph.iastate.edu/pdf/fad-prep-nahems-guidelines-health-and-safety>

9.5.4.3 Heat related illnesses

- High temperatures, high humidity, direct sun, direct heat, limited air movement, physical exertion, poor physical condition, certain medications, a low tolerance for heat and certain types of PPE can all contribute to heat-related illnesses (excerpt from USDA FAD-PreP/NAHEMS Guidelines: Health and Safety, 2011).
- It is important that personnel are familiar with the signs of heat-related illnesses and cease work when initial signs are detected.
- To prevent heat-related illness, limit work shifts so that personnel have time out of PPE to rehydrate, rest, and cool off.
- A cooling vest could be worn under the protective outerwear if the environment cannot be modified.

9.5.4.4 Cold stress

- Additional insulated underclothing may be needed to ensure personnel are able to maintain their core body temperature.
- Keeping appendages warm can be challenging in cold weather and dexterity decreases.
- To prevent cold stress, limit shifts so that personnel have time out of PPE to warm up, rest, and remain hydrated.

9.5.4.5 Slips, trips and falls

- It is important the protective footwear fit well and provide comfort or the wearer will be less agile, more apt to trip, or not comply with wearing them.
- When selecting between disposable or waterproof footwear, know the area where it will be worn.
 - If steps will be involved (such as on the side of a milk tanker or at the processing plant), good footing is a must.
 - Ensuring a safe walking and climbing environment is as important as disease control. Personnel must feel comfortable to walk around in order to follow biosecurity protocols.

9.6 Proper Disposal of PPE

9.6.1 PPE generated during an FMD outbreak: the performance standard is to dispose or launder PPE in a manner that does not expose susceptible species to FMD virus or contaminate people, vehicles, equipment, and supplies.

- Pre-event, estimate the amount of PPE that will be generated in a given time frame (daily, weekly) so that a disposal or laundering plan can be implemented to accommodate the volume of PPE used.
- A clearly marked receptacle should be provided on farm or at the processing plant so all personnel know where to dispose of their used PPE.
 - Ensure the receptacle is protected from wind and scavengers to prevent the contaminated PPE from leaving the premises. A sealable or latchable lid is advised.
 - A removable liner is advised for ease of removal and containment when transporting to its final destination.
- Burial, burning or landfilling are likely methods for disposal. Ensure the method selected is in accordance with state, local and municipal regulations.

Acknowledgments

This *Biosecurity Performance Standards (BPS) for Raw Milk Collection and Transport* was compiled by veterinarians at the Center for Food Security and Public Health (CFSPH), Iowa State University (ISU), College of Veterinary Medicine based on extensive input from dairy industry representatives, state and federal agencies, and academia (University of California, Davis and University of Minnesota). This material was made possible, in part, by a Cooperative Agreement from the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). It may not necessarily express APHIS' views. Our partners at USDA-APHIS and EPA provided content and review for Sections 1.5, 6, and 8.

Comments or Questions

Please send comments or questions to: smsinfo@iastate.edu

Additional Resources

The Secure Milk Supply website has additional resources available at: www.securemilksupply.org

APPENDIX 1: RISK ASSESSMENT BIOSECURITY PERFORMANCE STANDARDS (RA-BPS) EXECUTIVE SUMMARY

In the event of a foot-and-mouth disease outbreak in the United States (U.S.) livestock industry, local, state and federal authorities will implement a foreign animal disease (FAD) emergency response. “The response will consist of quarantines, movement controls and continuity of business (managed movement) which all have the ultimate goal to prevent transmission of the FAD to non-infected premises. Quarantines and movement controls are applied to premises in the regulatory Control Area to ensure infected animals, fomites and products do not leave premises. Continuity of business (COB) is intended to manage movement for the non-infected premises (At-Risk and Monitored Premises) in the Control Area. Managed movement involves the development and implementation of science and risk-based systems and protocols to help agriculture and food industries maintain essential business functions or return to business during an FAD response while the risk of disease spread is effectively managed” (USDA, 2013).

“Proactive risk assessments are one component of the COB process and are used to develop the requirements for movement of commodities outside of a regulatory Control Area. These requirements can include biosecurity measures, cleaning and disinfection (C&D) procedures and surveillance sampling prior to movement” (USDA, 2013). Performing the risk assessments prior to an FMD outbreak can enhance emergency response and facilitate timely movement permitting decisions during an outbreak. This report, the Risk Assessment Biosecurity Performance Standards (RA-BPS) Analysis evaluated the performance standards developed for the dairy premises, milk hauler, and processing plant during an FMD outbreak. This document assessed the risk that the transport of raw milk to processing into, within, and outside of a Control Area during an FMD outbreak will result in disease spread to susceptible premises when mitigations are in-place following the BPS guidance. Based on this analysis, the BPS were revised and additional BPS were developed to address all identified risk pathways. The BPS guidelines contain the revised risk-based outbreak measures based on the RA-BPS Analysis and risk assessment working group (RAWG) input.

This risk assessment is a joint effort between the Secure Milk Supply (SMS) industry working groups, the University of Minnesota’s Center for Animal Health and Food Safety (CAHFS), and the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Veterinary Services (VS) Center for Epidemiology and Animal Health (CEAH) to support permits for the movement of raw milk to processing during an FMD outbreak in the U.S. This assessment is applicable to dairy production sites producing Grade “A” milk following the U.S. Food and Drug Administration (FDA) Pasteurized Milk Ordinance (PMO)(FDA, 2009), applicable state regulations, and the proposed SMS Biosecurity Performance Standards (BPS) in the event of an FMD outbreak. The BPS evaluated within this report were developed and agreed upon by the dairy industry, state and federal animal health officials, and academic partners with the goal of preventing FMDv spread during milk movement in an outbreak. The BPS guidelines establish overarching goals for preventing spread of disease, but require states and regions to develop their own specific protocols or procedures based on their local regulations, available resources, climate, capabilities, and scope of the outbreak. Prior to this document, a “Risk Assessment for the Transmission of Foot-and-Mouth Disease via the Transport of Raw Milk Into, Within, and Outside of a Control Area during an FMD Outbreak” (May 2013) was conducted and is hereafter referred to as the Baseline RA. The Baseline RA identified the pathways that could result in further spread of the FMD virus (FMDv) from an infected but undetected dairy premises through the transport of raw milk to processing, using current industry practices with no additional mitigations in-place. It is assumed that if sufficient concentrations of virus can be transported from an infected but undetected farm and gain entry onto other premises with susceptible species, there will be a high likelihood of exposure and infection of those animals. The baseline RA indicated that the movement of raw milk to processing during an FMD outbreak has a *moderate to high likelihood* of resulting in transport of virus to susceptible farms and exposure of susceptible livestock through infectious raw milk and contaminated environmental media (mud, manure, and soils containing virus) on the hauler, tanker, and associated equipment.

The RA-BPS report: The RA-BPS Analysis evaluated the BPS assuming that an integrated collective approach is used to ensure that all potential means for viral transport are addressed and mitigated. The risk evaluation employed: a review of the scientific literature; historical outbreak information; current industry practices; input from the RAWG and other industry stakeholders; solicitation of expert opinion from the dairy industry, FMD researchers and other scientific disciplines; and observations by the risk analysts. All of these sources of

information were used to evaluate and determine the reduction in risk for each pathway with implementation of the applicable BPS.

The RA-BPS Analysis will ultimately provide the framework necessary for decision makers to:

- Quickly assess the effectiveness of current preventive measures and outbreak-specific risk mitigation measures as they pertain specifically to the movement of raw milk.
- Implement a permit system to allow premises not known to be infected with FMDv to move raw milk into, within, and out of the Control Area during an outbreak.

Seven risk pathways were evaluated that addressed the likelihood that movement of raw milk to processing will result in FMDv introduction to a susceptible farm. Condensed versions of the likelihood statements are presented in Table 1. This table highlights the change in risk for each pathway under current industry standards (no additional mitigations in-place) and with application of BPS (additional mitigations in-place). It is important to understand that the risk evaluation for each pathway is based on implementing the BPS in an integrated or collective approach, meaning that all applicable BPS must be applied together to decrease the risk of disease spread. The BPS should not be considered a “menu” in which one can pick and choose selections independently as this approach may not result in a reduction in risk.

Table 2. Risk Results of Pathway Analysis for Baseline RA and RA-BPS Analysis

	Pathway Number and Description (Contaminant sources include infectious spilled milk and contaminated environmental media)	Risk results with no additional mitigations in place (Baseline RA)	Risk results with BPS integrated approach (all milk collection options combined) (RA-BPS Analysis)
1	Likelihood that contamination of the hauler and tanker cab will result in FMDv introduction to a susceptible farm	Moderate to high	Negligible to moderate
2	Likelihood of external contamination of the tanker will result in FMDv introduction onto a susceptible farm	Moderate to high	Very low to moderate
3	Likelihood of milk containing FMDv emanating from a milk tanker via bioaerosolization will result in FMDv introduction onto a susceptible farm	Very low to Low	Negligible to low
4	Likelihood that virus present in milk residues left within tankers that have been unloaded and undergone CIP will result in FMDv contamination of a processing plant or introduction onto a susceptible farm	Negligible	Negligible
5	Likelihood that virus present in milk residues left within tankers that have been unloaded but have not undergone CIP will result in FMDv contamination of a processing plant or introduction onto a susceptible farm.	Low	Negligible to Low
6	Likelihood that contamination of the transfer hose and storage compartment will result in FMDv introduction onto a susceptible farm	Moderate to high	Negligible to Low
7	Likelihood that cross-contamination of another vehicle, person, or equipment at the processing plant or during transport and stops will result in FMDv introduction onto a susceptible farm	Moderate to high	Very low to low
8	Likelihood of introduction of FMDv onto a susceptible farm through contaminated milk and environmental media via the transport of raw milk	Moderate to high	Negligible to moderate

This document is an evolving, product-specific risk assessment that will be reviewed and updated as necessary before and during an FMD outbreak to incorporate the latest scientific information and preventive measures. If the Incident Command System (ICS) is activated in response to an FMD outbreak, APHIS (and Incident Command Staff) and State Animal Health Authorities will review this risk assessment with respect to the situation in order to assess industry requests for movement of raw milk to processing.

Overall Finding and Conclusion

The risk of FMDv contamination of a susceptible farm by contaminated milk and environmental media through the transport of raw milk into, within, and outside of a Control Area to processing is *negligible to moderate* provided the PMO guidance, state regulations, and the proposed BPS are strictly followed.

APPENDIX 2: BPS AND BEST PRACTICES FOR MILK COLLECTION WHEN THE MILK TRUCK/TANKER/HAULER DO NOT CROSS THE LINE OF SEPARATION (LOS)

This appendix contains examples of farms where their layout and direct route to the milk house would allow the milk tanker and hauler/driver to pick up milk without crossing the LOS. In this situation, the farm would establish its **milk house as outside the LOS** during milk collection and the hauler performs all milk collection activities. Dairy premises that utilize direct load tankers may also have a farm layout conducive to this approach.

A critical control point for preventing FMD virus introduction to the herd is the door from the milk house into the milking parlor during milk collection. Dairy premises personnel are responsible for cleaning and disinfecting the milk house and equipment once the hauler leaves. Haulers and farm personnel would need to follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described in this appendix to ensure FMD virus is not introduced or spread between dairy premises. Haulers should also follow the PPE requirements described in section 9.2.

This option closely aligns with normal milk collection activities in a non-FMD outbreak situation. It also offers a solution to the weather challenges (severe wind, heavy rains causing mud, heavy snow, freezing temperatures, etc.) as well as locations faced with water shortages. Each dairy premises should develop a farm-specific standard operating procedure (SOP) that meets or exceeds the biosecurity performance standards that is acceptable to the decision makers in their state.

Below is a brief checklist to determine if a dairy premises can utilize this option and minimize introduction of FMD virus from the milk tanker and hauler/driver:

- Milk house is adjacent to a public road and tanker does not enter dairy premises to collect milk – OR –
- Drive path leading to the milk house does not pass close to susceptible animals
- Area in front of the milk house does not slope towards animal housing or holding areas
- The hauler/driver is trained in proper protective gear donning, doffing and disposal
- Doors leading from the milk house can be established as controlled access points with signage, proper biosecurity steps posted, and all supplies required to meet the biosecurity steps
- Dairy premises personnel are trained in proper cleaning and disinfection protocols for the milk house
- Dairy premises personnel are trained in proper protective gear donning, doffing and disposal

Milk Truck/Tanker and Hauler/Driver Enter the Milk House and Do Not Cross LOS

Below are aerial photos of U.S. dairy premises with the LOS and controlled access points (temporary barrier to vehicle traffic) labeled. These farms have multiple entrances so the one leading directly to the milk house could be dedicated to just the milk tanker. The milk house is **OUTSIDE** the LOS during milk collection. All doors from the milk house leading to the farm side are controlled access points and biosecurity protocols must be followed to cross the threshold. Traffic entering the milk house, either from the outside or from the milking parlor, should be minimized at all times during an FMD outbreak. Dairy premises personnel entry should be prohibited during the time the milk hauler is there collecting milk.

Signage indicating milk collection is underway should be readily available for the milk hauler to post while in the milk house, stating no entry by dairy premises personnel during that time. Signage indicating milk collection is complete, but the milk house needs to be cleaned and disinfected should be readily available for the milk hauler to post before leaving. Signage indicating safe entry by dairy premises personnel should be readily available for dairy premises personnel to post after C&D is complete.

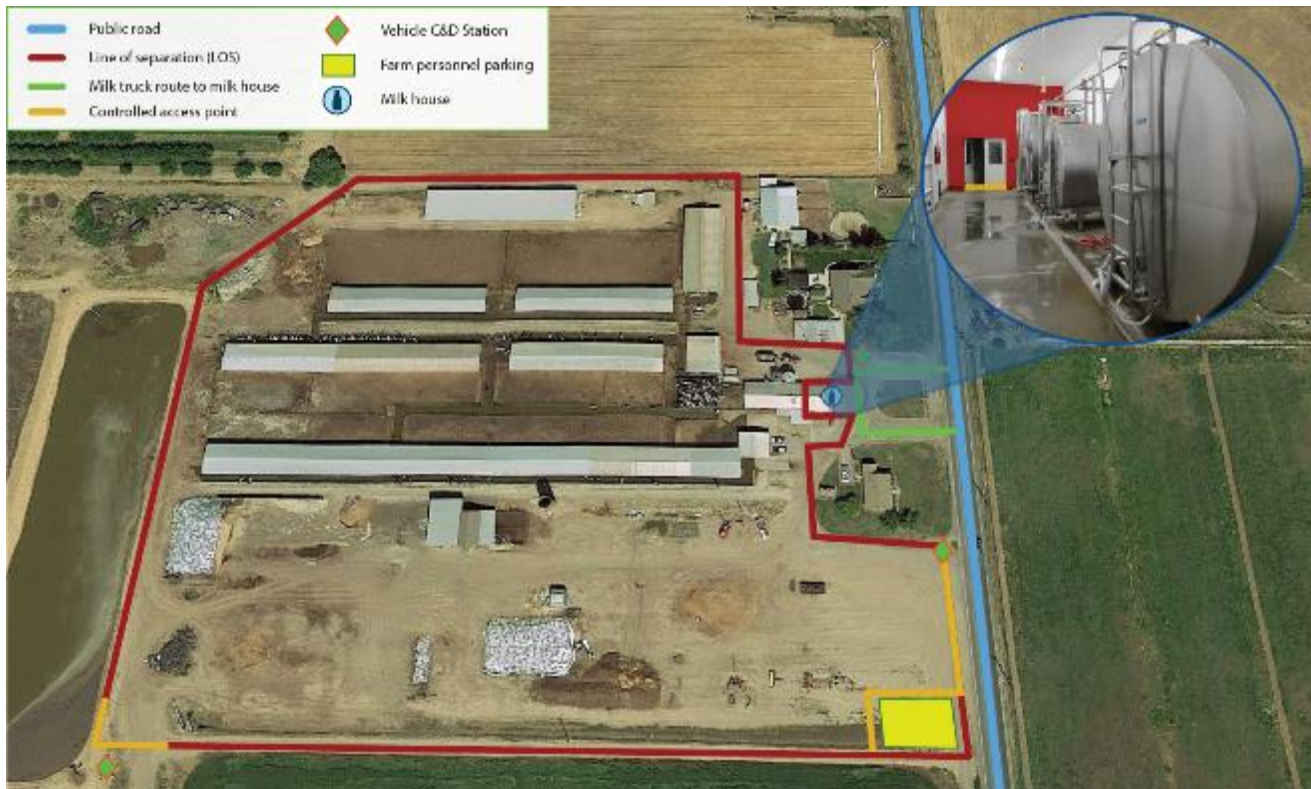
The hauler, wearing gloves and protective footwear, is responsible for milk collection activities according to the PMO. Dairy premises personnel, wearing gloves, protective outerwear, and protective footwear that are **NOT** worn around susceptible animals, are responsible for cleaning and disinfecting all surfaces of the milk house contacted by spilled milk or the hauler after milk collection is complete. Only after the milk house has been C&D can other personnel enter the space to perform their normal work tasks.

The Biosecurity Performance Standards listed below are **in addition** to those found in Sections 3, 4, and 5.1 of the Biosecurity Performance Standards: Raw Milk Collection and Transport document.

Farm Example 1: Milk House is Outside the LOS



Farm Example 2: Milk House is Outside the LOS



5.2 NOT Crossing the LOS: Truck/Tanker/Hauler Collecting Milk (Option 1)

5.2.1 The area where the milk tanker parks near the milk house is outside the LOS; the performance standard is to ensure other vehicles, personnel entering the dairy do not drive/walk through this area, unless they are involved in milk pumping activities and specific biosecurity steps are followed.

5.2.1.1 The milk tanker does not need to undergo C&D as it is not crossing the LOS.

- The milk tanker should be considered contaminated and poses the risk of FMD virus introduction to the area through its contaminated tires, wheel wells, and undercarriage.
 - Direct load tankers must be treated as “off-farm” and care taken when dairy premises personnel connect the farm-dedicated transfer hose to the pump.
- Depending on weather and road conditions, residue may be left behind after the tanker leaves the dairy premises. The area where the tanker drove and parked should be considered contaminated and a possible source of FMD virus introduction to the dairy herd.

5.2.1.2 On-farm vehicles are excluded from this area.

5.2.1.3 Susceptible animals should not walk through this area.

5.2.1.4 Farm personnel should not walk through this area.

- If they must, proper biosecurity protocols should be followed when crossing the LOS at a controlled access point.

5.2.1.5 Haulers should follow the PPE requirements described in section 9.2.

5.2.2 Truck-mounted transfer hose; the performance standard is to minimize contamination of subsequent dairy premises from raw milk (interior) and organic matter (exterior).

5.2.2.1 There are a variety of ways to minimize residual raw milk in transfer hoses and will vary by tanker and hauler capabilities.

- A sanitary check valve* placed at the bulk tank end of the transfer hose before pumping milk can help prevent back flow of raw milk after pumping, during hose coiling and storage.
 - *Permitted under the PMO if they are 3A sanitary verified.
- Some tankers utilize sanitized air under pressure to remove residual raw milk from the hose and pump after pumping, before leaving the dairy premises.
- Some haulers can close the inlet valve at the truck, disconnect the hose from the bulk tank, and use the tanker pump vacuum in reverse to air blow the residual raw milk back into the milk house. This requires an experienced hauler to ensure pump or tanker damage does not occur.
- If the above options do not exist:
 - Close inlet valve on the tanker after pumping is complete while hose is still connected.
 - Disconnect the hose from the bulk tank in the milk house.
 - Drain as much milk as possible from the hose into the milk house drain by “walking the hose back” from the tanker.
 - **BEST PRACTICE:** Disconnect the transfer hose from the tanker and cap it. Rinse the interior of the hose with potable water from the milk house until the discharge running into the milk house drain is clean and clear.
 - Cap the hose on both ends.

5.2.2.2 Minimize visible exterior contamination being carried by transfer hoses used on multiple farms.

- Handle the transfer hose to minimize external hose contamination with mud, manure, spilled milk and other environmental contamination.
- Ensuring both ends are capped, rinse the exterior of hose with water to remove visible organic matter.

- **BEST PRACTICE:** Spray the hose exterior surface with an FMD-approved disinfectant (see section 8) before storing on truck/tanker.

5.2.3 After milk collection is complete, the performance standard is for dairy premises personnel to don appropriate PPE and clean and disinfect the milk house floor and equipment contacted by the hauler.

5.2.3.1 Dairy premises personnel should wear gloves and protective outerwear and footwear while cleaning and disinfecting the milk house. These items should be removed before exiting the milk house and not be worn around animals or in animal areas.

- Cleaning steps: Soak area with water and a detergent or cleaning agent (soap). Wipe, spray or scrub the area to remove organic matter. Rinse to remove detergent/soap residues on all surfaces.
- Spray surfaces with an FMD-approved disinfectant (see section 8). Ensure it has wet contact for the recommended period of time. Reapplication may be necessary. Follow label directions for PPE recommendations, dilutions, water temperature, environmental temperature, and the need for ventilation when using the product.

5.2.3.2 If using a farm-dedicated transfer hose, the exterior of the hose should be cleaned and disinfected prior to sanitizing the interior in accordance with the PMO.

- Cleaning steps: Wash hose exterior with water. If organic matter remains, soak hose exterior with water and a detergent or cleaning agent (soap). Wipe, spray or scrub the area. Rinse to remove all detergent/soap residues on hose exterior.
- Spray the hose exterior surface with an FMD-approved disinfectant (see section 8). Ensure it has wet contact for the recommended period of time. Reapplication may be necessary. Follow label directions for PPE recommendations, dilutions, water temperature, environmental temperature, and the need for ventilation when using the product.

APPENDIX 3: BPS AND BEST PRACTICES FOR MILK COLLECTION WHEN ONLY THE TRANSFER HOSE CROSSES THE LINE OF SEPARATION (LOS)

This appendix contains examples of farms where the layout and direct route to the milk house would allow the milk tanker and hauler/driver to pick up milk without crossing the LOS. In this situation, the farm would establish the **area just in front of the milk house as outside the LOS**. C&D of the tanker would not be required.

One critical control point for preventing FMD virus introduction to the herd is ensuring the transfer hose exterior has no visible contamination as it crosses the LOS at a controlled access point. Another critical control point is to ensure residual raw milk in a truck-mounted transfer hose is not deposited on subsequent dairy premises. The hauler/driver works with farm personnel to accomplish milk collection activities, each staying on their respective sides of the LOS. Haulers and dairy premises personnel need to follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described in this appendix to ensure FMD virus is not introduced or spread between dairy premises. Haulers should also follow the PPE requirements described in section 9.2.

Each dairy premises should develop a farm-specific standard operating procedure (SOP) that meets or exceeds the biosecurity performance standards that is acceptable to the decision makers in their state.

Below is a brief checklist to determine if a dairy premises can utilize this option and minimize introduction of FMD virus from the milk truck/tanker and hauler/driver:

- Milk house is adjacent to a public road and tanker does not enter dairy premises to collect milk – OR –
- Drive path leading to the milk house does not pass close to susceptible animals
- Area in front of the milk house does not slope towards animal housing or holding areas
- State requirements for a licensed weigher/sampler to perform milk collection duties can be met
- A transfer hose is available that is long enough to reach from the bulk tank to the milk tanker through a controlled access point and does not exceed pump manufacturers recommendations
- The hauler/driver can work with farm personnel to accomplish milk collection activities
- The hauler/driver is trained in proper protective gear donning, doffing and disposal
- Dairy premises personnel are trained in proper cleaning and disinfection protocols for the milk transfer hose
- Dairy premises personnel are trained in proper protective gear donning, doffing and disposal

Only Transfer Hose Crosses LOS; Truck/Tanker and Hauler/Driver Remain Outside LOS

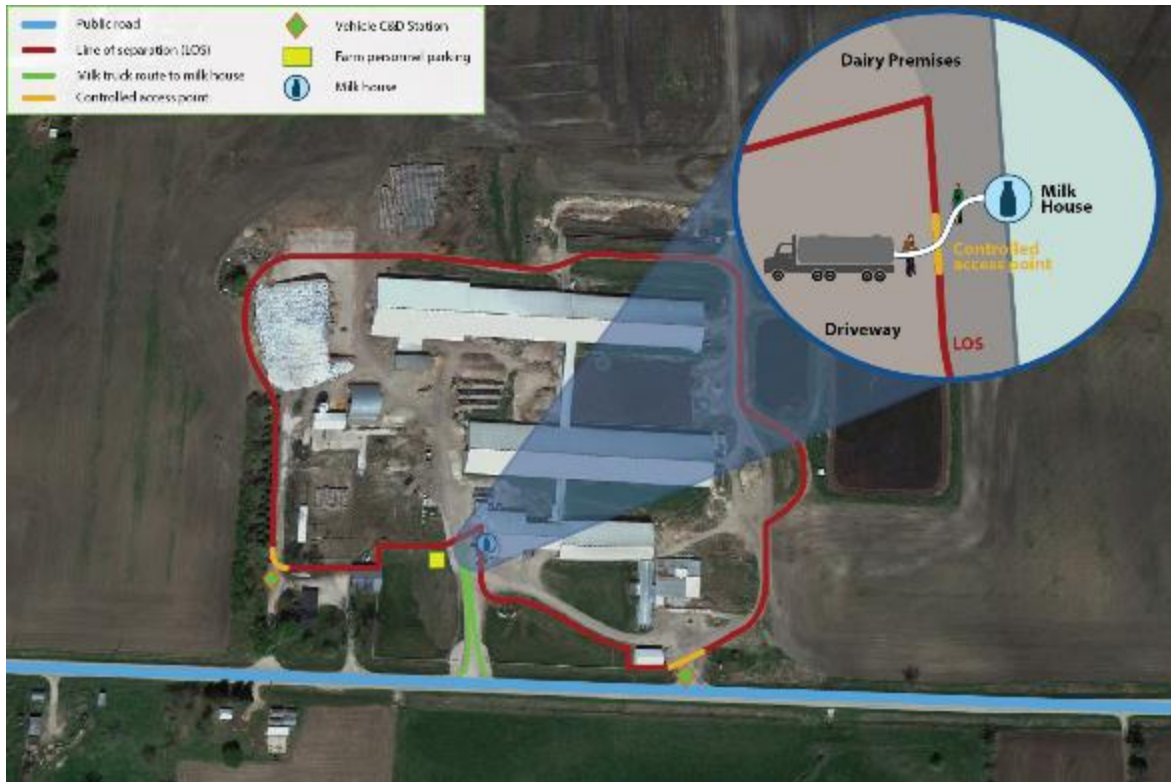
Below are aerial photos of U.S. dairy premises with the LOS and controlled access points (temporary barrier to vehicle traffic) labeled. These farms have multiple entrances so the one leading directly to the milk house could be dedicated to just the milk tanker. C&D of the milk truck/tanker would not be required as it remains outside the LOS. The hauler/driver also remains outside the LOS. Only the milk transfer hose crosses the controlled access point.

The hauler, wearing gloves and protective footwear, is responsible for connecting the transfer hose to the tanker and transporting milk samples (where applicable) without crossing the LOS.

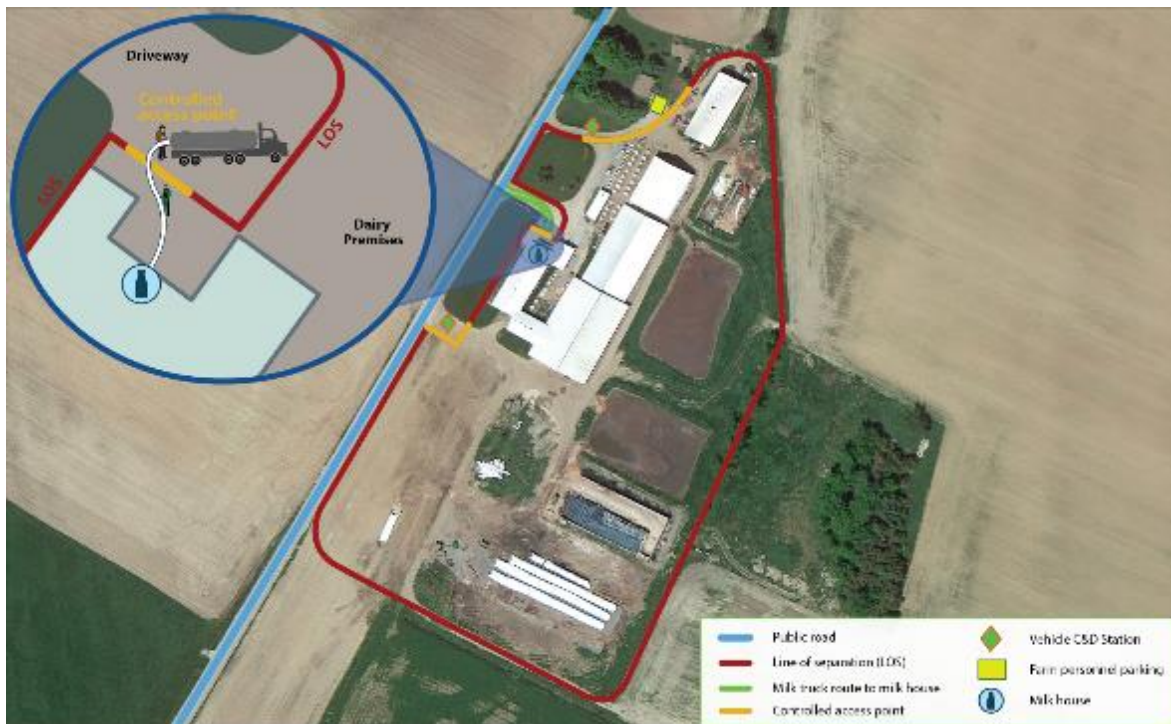
Dairy premises personnel, wearing gloves, will handle the transfer hose on the farm side (inside the LOS) and connect it to the bulk tank. Unless an emergency waiver is in place at the state level, this farm must have a licensed weigher/sampler on farm to measure and record milk weight, collect a bulk tank sample, and ensure milk quality prior to pumping according to the PMO regulations. Dairy premises personnel are responsible for cleaning and disinfecting the exterior surface of the milk transfer hose and the interior (if farm-dedicated) according to the PMO for Grade A milk.

The Biosecurity Performance Standards listed below are **in addition** to those found in Sections 3, 4, and 5.1 of the Biosecurity Performance Standards: Raw Milk Collection and Transport document.

Farm Example 1: Only Transfer Hose Crosses LOS; Milk Tanker, Hauler/Driver do not cross LOS



Farm Example 2: Only Transfer Hose Crosses LOS; Milk Tanker, Hauler/Driver do not cross LOS



5.3 Crossing the LOS: Only the Transfer Hose (Option 2)

5.3.1 The hauler/driver will not cross the controlled access point, but assists with handling the transfer hose outside the LOS; the performance standard is to meet State requirements for licensed weigher/samplers to perform milk collection duties on the farm side of the LOS.

5.3.1.1 Dairy premises owners should work with their State to determine the requirements to have a licensed weigher/sampler on farm to conduct the milk quality, weighing, and pumping tasks.

5.3.1.2 Haulers exiting the cab should follow the PPE requirements described in section 9.2.

- When exiting the cab, boots or disinfectable shoe covers should be worn.
- If handling the raw milk-transfer hose, gloves should also be worn.
- BEST PRACTICE: Haulers should wear protective outerwear over street clothes since milk spray during transfer hose connection can occur.
 - As an alternative to routine use of full protective outerwear, a change of street clothes should be carried in the event a hauler/driver's street clothes become dampened with raw milk.

5.3.2 Farm-dedicated transfer hose crosses the LOS at a controlled access point to connect to the tanker; the performance standard is to ensure there is no visible contamination on the hose exterior after pumping when crossing back to the farm side.

5.3.2.1 Dairy premises personnel should wear gloves, protective outerwear and footwear while handling the hose. These items should not be worn around animals or animal areas.

5.3.2.2 Dairy premises personnel and milk haulers/drivers should handle the transfer hose to minimize external hose contamination with mud, manure, and spilled milk.

- Hose should be coiled and transported without dragging along the ground whenever possible.
- After pumping is completed, the transfer hose is disconnected from the tanker and capped.
- If the transfer hose exterior is visibly soiled or contacts the ground outside the LOS, dairy premises personnel should be prepared to receive the hose and clean and disinfect its exterior as it is returned across the controlled access point. Ensure the disinfectant has contact for the recommended period of time.
 - Cleaning steps: Wash hose exterior with water. If organic matter remains, soak hose exterior with water and a detergent or cleaning agent (soap). Wipe, spray or scrub the area. Rinse to remove all detergent/soap residues on hose exterior.
 - Disinfectant steps: Spray the hose exterior surface with an FMD-approved disinfectant (see section 8). Ensure it has wet contact for the recommended period of time. Reapplication may be necessary. Follow label directions for PPE recommendations, dilutions, water temperature, environmental temperature, and the need for ventilation when using the product.
- Dairy premises personnel will ensure the hose is cleaned and sanitized in accordance with the PMO.

5.3.3 Truck-mounted transfer hose crosses the LOS at a controlled access point to connect to the bulk tank; the performance standard is to ensure there is no visible contamination on the hose exterior when crossing to the farm side.

5.3.3.1 Dairy premises personnel should wear gloves, protective outerwear and footwear while handling the hose. These items should not be worn around animals or animal areas.

5.3.3.2 Dairy premises personnel and milk haulers/drivers should handle the transfer hose to minimize external hose contamination with mud, manure, and spilled milk.

- Hose should be coiled and transported without dragging along the ground whenever possible.

5.3.3.3 Dairy premises personnel should be prepared to receive the hose and clean and disinfect its exterior as it crosses the controlled access point to the farm side to prevent introducing contamination. Ensure the disinfectant has contact for the recommended period of time.

- Cleaning steps: Wash hose exterior with water. If organic matter remains, soak hose exterior with water and a detergent or cleaning agent (soap). Wipe, spray or scrub the area. Rinse to remove all detergent/soap residues on hose exterior.
- Disinfectant steps: Spray the hose exterior surface with an FMD-approved disinfectant (see section 8). Ensure it has wet contact for the recommended period of time. Reapplication may be necessary. Follow label directions for PPE recommendations, dilutions, water temperature, environmental temperature, and the need for ventilation when using the product.

5.3.4 After pumping, truck-mounted transfer hose crosses the LOS at a controlled access point to be stored on tanker; the performance standard is to minimize contamination of subsequent dairy premises from raw milk (interior) and organic matter (exterior).

5.3.4.1 There are a variety of ways to minimize residual raw milk in transfer hoses and will vary by tanker and hauler capabilities.

- A sanitary check valve* placed at the bulk tank end of the transfer hose before pumping milk can help prevent back flow of raw milk after pumping, during hose coiling and storage.
 - *Permitted under the PMO if they are 3A sanitary verified.
- Some tankers utilize sanitized air under pressure to remove residual raw milk from the hose and pump after pumping, before leaving the dairy premises.
- Some haulers can close the inlet valve at the truck, disconnect the hose from the bulk tank, and use the tanker pump vacuum in reverse to air blow the residual raw milk back into the milk house. This requires an experienced hauler to ensure pump or tanker damage does not occur.
- If the above options do not exist:
 - The hauler/driver closes the inlet valve on the tanker after pumping is complete while hose is still connected.
 - Dairy premises personnel disconnect the hose from the bulk tank in the milk house.
 - Hauler/driver and dairy premises personnel work together on their respective sides of the LOS to drain as much milk as possible from the hose into the milk house drain by “walking the hose back” from the tanker.
 - **BEST PRACTICE:** Disconnect the transfer hose from the tanker and cap it. The hauler/driver hands it across the LOS to the dairy premises personnel. If visible exterior contamination exists on the hose, follow steps under 5.3.3.3. Dairy premises personnel rinses the interior of the hose with potable water from the milk house until the discharge running into the milk house drain is clean and clear.
 - Dairy premises personnel caps the hose on both ends.
 - Dairy premises personnel wash down the milk house floor to remove visible contamination.

5.3.4.2 Minimize visible exterior contamination being carried by transfer hoses used on multiple farms.

- Handle the transfer hose to minimize external hose contamination with mud, manure, spilled milk and other environmental contamination.
- Ensuring both ends are capped, rinse the exterior of hose with water to remove visible organic matter as it crosses the LOS to be stored on the tanker.
- **BEST PRACTICE:** Spray the hose exterior surface with an FMD-approved disinfectant (see section 8) as it crosses the LOS at the controlled access point, before storing on truck/tanker.
- Hauler/driver will receive the transfer hose and store it in the storage compartment on the tanker.

APPENDIX 4: BPS AND BEST PRACTICES FOR MILK COLLECTION WHEN MILK TRUCK/TANKER AND HAULER/DRIVER CROSSES THE LINE OF SEPARATION (LOS)

This appendix contains examples of farms that house or hold animals near the milk truck/tanker drive path to the milk house. The LOS should be established at some distance from these animals. There are three critical control points for preventing FMD virus introduction to the herd in this situation:

- Milk truck/tanker is cleaned and disinfected (C&D) prior to crossing the controlled access point at the LOS
- Milk hauler/driver exiting the cab to collect milk does not contact people, animals, milk fed to susceptible animals, and wears proper PPE
 - a. Another option: Haulers/drivers do not exit the cab
- Truck-mounted transfer hose is handled to prevent depositing raw milk and environmental contamination from previous farm pickups onto the dairy premises
 - a. Another option: Use a farm-dedicated transfer hose.

Dairy premises need to follow their State's requirements to have a licensed weigher/sampler on farm to complete all the steps necessary to collect milk. Dairy premises with direct load tankers should ensure their personnel are trained in tractor-trailer connections and covered under insurance to perform these duties.

Haulers and dairy premises personnel need to follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described in this appendix to ensure FMD virus is not introduced or spread between dairy premises. Haulers should follow the PPE requirements described in section 9.2.

Each dairy premises should develop a farm-specific standard operating procedure (SOP) that meets or exceeds the biosecurity performance standards that is acceptable to the decision makers in their state.

Below is a brief checklist to determine if a dairy premises needs to C&D the milk truck/tanker to minimize introduction of FMD virus. If one or more are checked, milk truck/tanker C&D should occur:

- Drive path leading to the milk house passes close to susceptible animals
- Drive path leading to milk house is shared with vehicles that are used on-farm in animal areas
- Area in front of the milk house slopes towards animal housing or holding areas

Milk Truck/Tanker and Hauler/Driver Cross the Line of Separation

Below are aerial photos of U.S. dairy premises with the LOS and controlled access points (temporary barrier to vehicle traffic) labeled. The drive path to the milk house passes near animal housing or holding areas. Therefore, the milk truck/tanker should undergo cleaning and disinfection prior to crossing the controlled access point at the LOS to minimize the potential for FMD virus to enter the dairy premises.

The milk hauler may need to exit the cab to collect milk and specific BPS need to be met to minimize the potential for FMD virus to enter the dairy premises.

Truck-mounted transfer hoses may need to be used to pump milk and specific BPS need to be met to minimize the potential for FMD virus to enter the dairy premises.

The Biosecurity Performance Standards listed below are **in addition** to those found in Sections 3, 4, and 5.1 of the Biosecurity Performance Standards: Raw Milk Collection and Transport document.

Farm Example 1: Milk Tanker, Hauler/Driver crosses LOS



Farm Example 2: Milk Tanker, Hauler/Driver crosses LOS



Farm Example 3: Milk Tanker, Hauler/Driver crosses LOS



5.4 Crossing the LOS: Milk Truck/Tanker (Option 3a)

5.4.1 When crossing the LOS at a controlled access point, the performance standard is removal of all visible contamination on the milk tanker (or other conveyances) followed by disinfection.

5.4.1.1 The dairy premises should have a C&D station set up outside of, but adjacent to, the controlled access point to C&D all milk trucks/tankers entering and leaving the farm.

- The area where the tanker is cleaned and disinfected should be free of dirt/mud (ideally on a hard/solid or well-drained gravel surface).
- The milk hauler/driver should remain in the cab of the milk tanker.
 - b. If the milk hauler/driver must exit the cab for any reason, follow protocols under section 4.1.2.
- Designated on-farm personnel should be prepared to clean and disinfect the milk tanker prior to entry.
 - c. This will require proper protective gear (see section 9.2), cleaning equipment (see section 7), and approved disinfectant (see section 8).
- All protective gear and equipment should be stored at or near the disinfection station.
- Run-off/effluent from the C&D station must be managed such that it does not enter animal housing, drive paths, flowing streams, ditches or other avenues that leave the dairy farm premises.
 - d. Any applicable state or local regulations regarding the management of the run-off/effluent should be followed.
- Mobile cleaning and disinfecting units as approved by the Incident Management Team may be utilized.

5.4.1.2 C&D station personnel should inspect the milk tanker storage compartment and external surfaces to monitor for milk leakage during transit.

- If the sides of the tanker are milk-streaked, this could indicate loss from the dome lid assembly.
- The storage compartment seal should be broken by farm personnel and given to the driver in the cab.
- The hauler should be notified of any milk leakage so the problem can be addressed at the next off-load at the processing plant.
 - o If milk leakage is excessive, i.e., it will leave a puddle on subsequent dairy premises, it should return to the plant so the problem can be addressed before picking up additional raw milk.
- Trucks/tankers with leakage should have the storage compartment cleaned and disinfected, as well as the rest of the tanker exterior.

5.4.1.3 The milk tanker should be cleaned as described in section 7 (focusing on the tires, wheel wells, undercarriage, mud flaps, splash guards, storage compartment, steps) to remove visible contamination.

- Use the least amount of water necessary.
- Run-off and splashes should not come in contact with susceptible animals.
- Run-off and splashes should be contained or managed so that it is prevented from entering nearby water sources or off-site traffic areas per local and/or state environmental regulations as it may contain virus.
- In situations where the milk tanker does not cross the LOS, C&D of the tanker will not be required.

5.4.1.4 The milk tanker should be properly disinfected with an approved disinfectant that is applied for the recommended wet contact time per label directions before entry to the premises.

- EPA-approved disinfectants against FMD virus can be found in section 8.

BEST PRACTICE: When exiting the dairy premises, the milk tanker should go through the same C&D steps as upon entry.

- To minimize the time required for extensive cleaning, minimize contamination of the tanker's exterior while driving on the dairy premises and during milk loading.

5.4.2 Milk haulers/drivers in trucks/tankers that cross the LOS (multi-farm pickups or empty for direct loading); the performance standard is to minimize the need for the milk hauler/driver to exit the cab.

5.4.2.1 The dairy premises should work with the State to determine the requirements to have a licensed weigher/sampler on farm to conduct the milk quality, weighing, and pumping tasks.

5.4.2.2 Dairy premises personnel disconnect the transfer hose from the milk tanker, rinse and disinfect the valve area, and place dust cap over valve.

- For farm-dedicated transfer hoses, dairy premises personnel are responsible for ensuring the transfer hose is cleaned and sanitized with the rest of the equipment on farm and stored according to the standards in the PMO.
- For truck-mounted transfer hoses, follow the steps in 5.5.1.1.

5.4.2.3 Dairy premises personnel meets milk hauler/driver at cab and obtains seal(s) to place on dust cap and other designated locations.

The next steps are specific to direct loads and delivering an empty tanker and/or picking up a full tanker that crosses the LOS:

5.4.2.4 Milk hauler/driver places empty tanker near milk house and remains in tractor cab.

5.4.2.5 Dairy premises personnel disconnects tractor from empty tanker.

NOTE: Some companies do not allow this step for insurance and other operational reasons.

- If milk hauler/driver must leave tractor cab but will have no contact with raw milk, he/she should wear PPE appropriate for the situation. At a minimum, milk haulers should wear gloves and protective footwear.
- If the hauler/driver needs to handle raw milk or have direct contact with any equipment in the milk house the while on the dairy premises, follow protocols under section 4.1.2.

5.4.2.6 Milk hauler/driver moves tractor to filled tanker.

5.4.2.7 Dairy premises personnel connect the tractor to tanker.

5.5 Crossing the LOS: Milk Hauler/Driver Exits the Cab (Option 3b)

Milk haulers/drivers that need to exit the cab after the milk truck/tanker crosses the LOS need to meet BPS to minimize FMD virus introduction onto the dairy premises. Milk haulers/drivers should carry a supply of gloves, protective outerwear and footwear (personal protective equipment or PPE) with them on their routes (see sections 9.2). The specific PPE worn by the hauler will be determined by the hauler's activities, standard operating procedures required by the Incident Management Team, and environmental conditions.

Milk haulers/drivers should also carry a supply of approved disinfectant (see section 8). NOTE: Due to transportation regulations, the disinfectant should not be stored in the cab or with any milk samples. Milk haulers should also carry spray equipment (e.g., garden sprayer) capable of effectively applying disinfectant to their protective outerwear/footwear. This equipment should be supplied by the trucking company and would be used in a situation where the hauler's protective outerwear/footwear becomes contaminated and are unable to use farm C&D equipment to remove contamination.

Haulers and dairy premises personnel need to follow the BPS described in sections 3, 4, and 5.1 as well as the additional BPS steps described below. Haulers exiting the cab should follow the PPE requirements described in section 9.2.

5.5.1 Truck-mounted transfer hoses; the performance standard is to minimize contamination of subsequent dairy premises from raw milk (interior) and organic matter (exterior).

5.5.1.1 There are a variety of ways to minimize residual raw milk in transfer hoses and will vary by tanker and hauler capabilities.

- A sanitary check valve* placed at the bulk tank end of the transfer hose before pumping milk can help prevent back flow of raw milk after pumping, during hose coiling and storage.
 - *Permitted under the PMO if they are 3A sanitary verified.
- Some tankers utilize sanitized air under pressure to remove residual raw milk from the hose and pump after pumping, before leaving the dairy premises.
- Some haulers can close the inlet valve at the truck, disconnect the hose from the bulk tank, and use the tanker pump vacuum in reverse to air blow the residual raw milk back into the milk house. This requires an experienced hauler to ensure pump or tanker damage does not occur.
- If the above options do not exist:
 - Close inlet valve on the tanker after pumping is complete while hose is still connected.
 - Disconnect the hose from the bulk tank in the milk house.
 - Drain as much milk as possible from the hose into the milk house drain by “walking the hose back” from the tanker.
 - **BEST PRACTICE:** Disconnect the transfer hose from the tanker and cap it. Rinse the interior of the hose with potable water from the milk house until the discharge running into the milk house drain is clean and clear.
 - Cap the hose on both ends.
- The tanker-mounted pump and cross-over pipe (if used) should not be removed on-farm for cleaning if this activity will cause additional spillage of potentially commingled milk from the tanker and the piping.

5.5.1.2 Minimize visible exterior contamination being carried by transfer hoses used on multiple farms.

- Handle the transfer hose to minimize external hose contamination with mud, manure, spilled milk and other environmental contamination.
- Ensuring both ends are capped, rinse the exterior of hose with water to remove visible organic matter.
- **BEST PRACTICE:** Spray the hose exterior surface with an FMD-approved disinfectant (see section 8) before storing on truck/tanker.

APPENDIX 5: FACTORS TO CONSIDER PRE-EVENT FOR INDUSTRY, STATE, AND FEDERAL PLANNING



The following summary highlights Performance Standards that the Working Group Members felt would benefit from pre-event communication and planning on a more local level to accomplish. The standards, factors to consider, and tasks for government and industry to address pre-event are listed. Please refer to the full BPS document for additional details.

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p>3.1 Milk Truck/Tanker Movement and Storage</p> <p><i>3.1.2 The Incident Management Team may designate traffic corridors in the Control Area; the performance standard is for milk haulers/drivers to adhere to designated traffic corridors and avoid tire contact with manure or other organic material where possible</i></p> <ul style="list-style-type: none"> • This PS is designed to decrease the potential infectious burden to remove upon farm entry 	<ul style="list-style-type: none"> • Routes will be designated on an operational period basis (24 hour) by the Operations section of Incident Command • Back roads need to be clearly marked with name or route number. During communication between haulers/tanker drivers, dispatchers, and incident command, the name/number that appears on the road sign should be used. • There are potential ways that milk tankers could be contaminated, such as unpaved roads necessary to get to a farm and cross traffic. A standard of “minimizing” contamination (rather than “avoiding”) should be established so that all parties are satisfied with the condition of the tanker. • A communication possibility is instant transmission of routing information from a dispatch center to the hauler through GPS technology. This could be added to trucks without GPS in a short time period (6 hours). 	<ul style="list-style-type: none"> • Define the 24-hour operational period that will be used for route designation • Determine if and how routing will be linked to premises classification and permitting; communicate this with industry • Identify personnel responsible for monitoring routes and communicating information to industry • Identify areas of local (police) and national (DOT, National Guard) governmental support related to control of traffic including roadblocks, patrols, and fines, and communicate information with industry • Identify industry key points of contact pre-event and communicate protocols with industry on transportation routes during event 	<ul style="list-style-type: none"> • <i>Haulers:</i> Emphasize the importance of strict adherence to designated routes • <i>Haulers:</i> Communicate with dispatch any contaminated roadways within the FMD Control Area • <i>Haulers:</i> Provide contact information to government • <i>Haulers:</i> Identify and communicate protocols and schedule with haulers/tanker drivers on transportation routes • <i>Haulers:</i> Maintain contact information for all premises on route in case of a delay or preventing milk pickup • <i>Haulers:</i> Identify best technology for sharing route information with their drivers en route, and work toward implementation pre-event.
<p>4.1 Milk Haulers/Drivers on a Dairy Premises</p>	<ul style="list-style-type: none"> • Early in an outbreak, PPE supplies may be hard to rapidly obtain from a supplier; determine acceptable protective wear alternatives to protect the hauler from contaminating their clothing and footwear with raw milk 	<ul style="list-style-type: none"> • Determine protective wear expectations for those entering the premises and communicate this to producers 	<ul style="list-style-type: none"> • <i>Premises:</i> Have a dedicated storage area available for waterproof outerwear should

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p><i>4.1.2 Milk Haulers/Drivers involved in milk collection activities; the performance standard is to prevent raw milk from contacting their street clothing and footwear.</i></p> <ul style="list-style-type: none"> • This PS is designed to prevent potential FMD virus entry to the dairy premises via the milk hauler who may travel to multiple dairy premises on one route 	<ul style="list-style-type: none"> • Determine whether the premises or hauler will be responsible for supplying the protective wear, and any additional backup protective wear. • Distribute a suggested/required supply list to haulers/processors to have on hand in case of an outbreak; Examples: lab coats, butcher’s or milker’s apron, garbage bag with head/arm holes, palpation sleeves, gloves, plastic boots, rubber overshoes, etc. • The cab of the truck should be considered a ‘clean’ zone, not bringing in organic material (milk, manure, mud) from the dairy premises • PPE should be specific to the tasks at hand – crossing the LOS or not • Determine if disposable or waterproof outerwear is more appropriate based on climate, industry capabilities, ability to adequately disinfect, and resources available • All entities (dairy premises, haulers, processors) should determine the responsible party for obtaining the necessary protective outerwear, footwear, and disinfectants and communicate these expectations prior to a response • Proper disposal of outerwear on farm must be determined – disinfecting, burning, burying, etc. – as this will affect more than just the milk haulers outerwear (any service provider on farm with animal or milk contact will need to wear protective outerwear that should not leave the farm) • Importance of compliance and training materials could be provided through a variety of entities; Examples: milk hauler associations, state and national cattle associations, SMS website, state officials, incorporated into licensed milk sampler/hauler training at the state level, etc. • A farm-specific SOP should be developed and communicated to all haulers picking up milk on that dairy in the FMD Control area 	<ul style="list-style-type: none"> • Communicate PPE disposal options that are in accordance with state regulations 	<p>this be the option selected</p> <ul style="list-style-type: none"> • <i>Premises:</i> Describe how PPE will be disposed of, ensuring to meet local and state ordinances, in your farm-specific SOP • <i>Premises:</i> Have a supply of gloves and protective outerwear and footwear for the hauler in the event theirs becomes depleted, damaged or contaminated • Communicate expectations between the <i>premises and hauler</i>, including supply of protective wear • <i>Haulers:</i> Determine options and have a plan to obtain resources needed to accomplish task • <i>Haulers:</i> Ensure you are comfortable donning and doffing the protective gear necessary to perform the various tasks • Ensure <i>haulers</i> obtain the necessary training to effectively implement protocols

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p>4.2 Milk Trucks/Tankers on a Dairy Premises</p> <p><i>4.2.1 The performance standard is for dairy premises personnel to record all vehicle and people movements that enter the dairy premises.</i></p> <ul style="list-style-type: none"> • This PS is designed to enhance trace-back and trace-forward information 	<ul style="list-style-type: none"> • To trace movements, multiple options could be utilized depending on requirements by officials, resources available and capabilities of industry; Examples: GPS on trucks, electronic weigh bills, preprinted labels carried by the haulers and left on farm, information on permit carried by hauler, etc. 	<ul style="list-style-type: none"> • Determine what information must be collected at the farm level and in what format • Communicate expectations to industry (premises, haulers and processors) 	<ul style="list-style-type: none"> • <i>Premises:</i> Obtain forms, if required, from the Incident Management Team (IMT), and be prepared to collect the info and provide forms when required • <i>Haulers:</i> Be prepared to provide details as required by the IMT
<p><i>4.2.2. In order to pick-up milk on a dairy premises, the performance standard is to provide a clean drive path for the milk tanker to approach the milk house (free of animal excrement).</i></p> <ul style="list-style-type: none"> • This PS is designed to decrease the infectious burden in the environment where vehicles will travel 	<ul style="list-style-type: none"> • FMD virus is shed in manure of infected animals so a drive path that is also used for animal movement will be difficult to clean and disinfect on a regular basis in all weather conditions. 	<ul style="list-style-type: none"> • Individual states may decide that driving across a contaminated path is acceptable with appropriate milk tanker exit cleaning and disinfection procedures • Communicate expectations with industry 	<ul style="list-style-type: none"> • <i>Premises:</i> Plan a clean path for tanker to drive on to pick up milk • <i>Premises:</i> Communicate with animal health officials pre-event to ensure acceptance of drive path during an FMD outbreak
<p><i>4.2.4 To mitigate the risk of bioaerosols escaping the air vent during milk pumping and transporting, the performance standard is to</i></p>	<ul style="list-style-type: none"> • This is standard practice for many haulers, but not all. 	<ul style="list-style-type: none"> • Communicate state regulations to industry related to venting during pumping 	<ul style="list-style-type: none"> • <i>Haulers:</i> Know the state regulations related to venting during pumping

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p><i>close and lock the dome lid (secured by the dog legs).</i></p> <ul style="list-style-type: none"> • This PS is designed to further prevent the unlikely escape of FMD virus through the vent 			
<p>4.3 Milk Samples</p> <p><i>4.3.1 Milk sample vial(s) collected/picked up on farm; the performance standard is to ensure no visible contamination on the exterior of the disinfectable outer container (plastic sealable bag).</i></p> <ul style="list-style-type: none"> • This PS is designed to prevent cross contamination 	<ul style="list-style-type: none"> • Normally, samples are collected from all bulk tanks and tested at the processing plant; determine if this will still be the case in an FMD outbreak situation • Determine via pre-event testing whether carrying samples in a plastic sealable bag or other disinfectable outer container will affect the requirement to maintain the sample temperature between 32 and 40 degrees. 	<ul style="list-style-type: none"> • Determine if bulk tanks samples will be collected in an FMD outbreak and how samples will be handled, couriers, plants, etc. 	<ul style="list-style-type: none"> • <i>Premises and Haulers:</i> Discuss bulk tank sample expectations with government officials and processors • <i>Haulers:</i> Ensure the container used to transport milk samples can safely transport them if they are individual plastic bags
<p>5.1 Establishing a Line of Separation (LOS) on a Dairy Premises</p> <p><i>5.1.1 When determining the location(s) for the line of separation (LOS) and controlled access point(s), the performance standard is to establish a boundary that adequately separates off-farm movements from on-farm</i></p>	<ul style="list-style-type: none"> • When determining the LOS, be sure susceptible species do NOT have fence line contact with roadways • Evaluate a typical week’s worth of movements on-farm and off-farm to determine the best location for the LOS • Consider the availability of water, power, mud-free surface for the location of controlled access point(s) as a C&D station will be needed to cross the LOS to the farm side 	<ul style="list-style-type: none"> • Review dairy premises biosecurity SOPs that include their proposed LOS and controlled access point(s) 	<ul style="list-style-type: none"> • <i>Premises:</i> Include an aerial photo of your farm (available online) and clearly mark the LOS and controlled access points. • <i>Premises:</i> Identify signage and blockade devices to clearly mark the LOS and controlled access points.

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p><i>movements to prevent exposure of susceptible animals.</i></p> <ul style="list-style-type: none"> • This PS is designed to prevent the introduction of FMD virus onto a dairy operation 			
<p>5.2 NOT Crossing the LOS: Truck/Tanker/Hauler Collecting Milk</p> <p><i>5.2.1 The area where the milk tanker parks near the milk house is outside the LOS; the performance standard is to ensure other vehicles, personnel entering the dairy do not drive/walk through this area, unless they are involved in milk pumping activities and specific biosecurity steps are followed.</i></p> <ul style="list-style-type: none"> • This PS is designed to focus disease prevention resources on the LOS and ensuring personnel, vehicles do not cross 	<ul style="list-style-type: none"> • Some milk houses on dairy premises are located nearly on the road. The level of contamination on the road may not be different from the area in front of the milk house. If this drive path can be dedicated to the milk tanker (no animals travel the area, no other vehicles enter/leave), with proper biosecurity protocols, the tanker and hauler/driver could remain outside the LOS during pumping • The tanker would NOT undergo C&D as it does not ‘cross’ the LOS at a controlled access point. • Direct load tankers may fall under this situation as well. 		
<p>5.3 Crossing the LOS: Only the Transfer Hose</p> <p><i>5.3.1 The hauler/driver will not cross the</i></p>	<ul style="list-style-type: none"> • For farms with a dedicated drive path for the milk tanker, and the tanker can get close enough to the milk house while still remaining on the outside of the LOS, the transfer hose is the only 	<ul style="list-style-type: none"> • Determine if your state milk licensing agency will allow on-farm weighers/samplers to 	<ul style="list-style-type: none"> • <i>Premises:</i> Work with your state licensing agency to have one or more weigher/samplers trained pre-event.

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p><i>controlled access point, but assists with handling the transfer hose outside the LOS; the performance standard is to meet State requirements for licensed weigher/samplers to perform milk collection duties on the farm side of the LOS.</i></p> <ul style="list-style-type: none"> • This PS is designed to focus disease prevention resources on the transfer hose and ensuring the hauler adheres to all protocols to not introduce FMD virus 	<p>object that needs to cross the controlled access point to pump milk</p> <ul style="list-style-type: none"> • The transfer hose would need to cross the LOS and undergo appropriate C&D to prevent introducing organisms onto the farm side of the LOS. • Requires a licensed weigher/sampler available on the dairy premises to provide the farm-side steps of milk pickup. • It could be a farm-dedicated hose (less risk of introducing virus) or a truck-mounted hose (more biosecurity protocols needed to prevent virus introduction) 	<p>undergo training pre-event.</p> <ul style="list-style-type: none"> • Discuss with industry the basis of payment and if that needs to change in an emergency in the event a licensed weigher/sampler is not available for the dairy premises 	<ul style="list-style-type: none"> • <i>Premises:</i> Ensure the weigher/sampler maintains their license (most last 2 years) • <i>Premises & Haulers:</i> Work together pre-event to determine if the hose will reach from the bulk tank to the tanker. • <i>Premises:</i> Obtain the supplies required to ensure the transfer hose does not introduce contamination as it crosses to the farm-side from outside the LOS
<p><i>5.3.2 Farm-dedicated transfer hose crosses the LOS at a controlled access point to connect to the tanker; the performance standard is to ensure there is no visible contamination on the hose exterior after pumping when crossing back to the farm side.</i></p> <ul style="list-style-type: none"> • This PS is designed to limit potential FMD virus entry to the dairy premises via the transfer hose that 	<ul style="list-style-type: none"> • The transfer hose must undergo C&D protocols when crossing onto the farm side from outside the LOS to minimize virus entry 	<ul style="list-style-type: none"> • Determine if dairy premises can have their own transfer hose or if they need to use a truck-mounted hose and communicate that to industry 	<ul style="list-style-type: none"> • <i>Premises:</i> Pending state regulations and hose connection size on the tanker, be prepared to purchase a farm-dedicated transfer hose and clean it after use • <i>Premises:</i> Work with haulers to learn how to connect/disconnect transfer hoses to the bulk tank

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p>may be used on multiple dairy premises on one route</p>			
<p><i>5.3.3 Truck-mounted transfer hose crosses the LOS at a controlled access point to connect to the bulk tank; the performance standard is to ensure there is no visible contamination on the hose exterior when crossing to the farm side.</i></p> <p>• This PS is designed to limit potential FMD virus entry to the dairy premises via the transfer hose that may be used on multiple dairy premises on one route</p>	<ul style="list-style-type: none"> • The transfer hose must undergo C&D protocols when crossing onto the farm side from outside the LOS to minimize virus entry • Residual milk in the transfer hose may contain FMD virus in milk from previous farm pickups (not known to be infected dairy premises). Therefore, the dairy premises should be aware of the risks of subsequent milk pickups and ensure any raw milk spilled on farm is cleaned and disinfected immediately, before personnel walk through the area. • If the area below the milk hose connection on the tanker is not a solid surface, an impermeable tarp could be used to capture milk spills. • Training on proper procedures to prevent milk spills or leaks could be provided through videos available from milk hauler associations, state officials, SMS website, others • Standard Operating Procedures should be established for trucks that use a truck-mounted transfer hose and pick up more than one farm per load, or pick up multiple farms per day without clean-in-place of hose, pump at every off-load 	<ul style="list-style-type: none"> • Determine if dairy premises need to have their own transfer hose or can use a truck-mounted hose and communicate that to industry • For tankers performing multiple farm pickups between off-loads, determine protocol for dealing with spills occurring on the premises during pumping of milk; communicate this with premises, haulers 	<ul style="list-style-type: none"> • <i>Premises:</i> Ensure personnel know how to connect/disconnect transfer hoses to bulk tank • <i>Haulers:</i> Determine options to ensure the exterior of the transfer hose is clean and disinfected and milk from the tanker is not spilled on subsequent farms • <i>Haulers:</i> Have a plan to obtain resources needed to accomplish tasks
<p>5.4 Crossing the LOS: Milk Truck/Tanker</p> <p><i>5.4.1 When crossing the LOS at a controlled access point, the performance standard is removal of all visible contamination on the milk tanker</i></p>	<ul style="list-style-type: none"> • Establish definitions of “clean” and “no visible contamination” so compliance can be monitored; this could include a checklist, visual examples, written explanations • Encourage industry and State Animal Health Officials (SAHOs) to discuss feasible options for achieving this PS in the local setting • Availability and selection of an appropriate “disinfection station” could vary at the local and regional level • A possibility is a high pressure spray rig to follow tankers. This may be 	<ul style="list-style-type: none"> • Communicate expectations and any available resources with industry • Determine availability of C&D supplies and facilities likely to be offered, including sources of mobile options • Communicate expectations for clean/no visible 	<ul style="list-style-type: none"> • <i>Premises:</i> Explore options for reducing contamination on the tanker from dirt or gravel driveways • <i>Premises:</i> Identify possible locations for a single cleaning and disinfection station to be used upon entry and exit of vehicles • <i>Premises:</i> Ensure farm personnel

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p><i>(or other conveyances) followed by disinfection.</i></p> <ul style="list-style-type: none"> • This PS is designed to prevent potential FMD virus entry to the dairy premises 	<p>useful for removing gross contamination, but disinfection on the premises will still be necessary.</p> <ul style="list-style-type: none"> • A possibility is establishing a regional C&D station focused on cleaning (removal of visible contamination) and a station at the farm gate focused on disinfection • A possibility is one verified disinfection station for multiple farms, provided producers are willing to take this risk (suggest signing an agreement accepting risk for “group biosecurity”)* • *The Dairy Premises Biosecurity Working Group believes that grouping premises by location and status is less than ideal. • States may want to establish expectations for the disinfection station and audit the capabilities on farm pre-event • Depending on the farm, only minimal exterior tanker cleaning may be required to remove visible contamination, thus speeding up the exit process • Options for reducing contamination from dirt driveways at the premises should be explored and discussed • The C&D station should be set up outside of, but adjacent to the controlled access point(s) • The hauler should remain in the truck during the C&D process as long as truck idle laws allow it • If the hauler needs to exit the vehicle, follow protocols under section 4.1.2 • Alternating C&D personnel between farms could also help with availability of farm personnel as long as proper biosecurity measures are taken by labor force • A plan needs to be established that meets local regulations for C&D waste water handling; is recapturing it, deactivating it and spreading it an option? • Field demonstrations on full-sized milk tankers used 50-60 gallons of 	<p>contamination with industry</p> <ul style="list-style-type: none"> • Identify exterior truck washing facilities in state, region • Communicate with truck washing facilities pre-event regarding their capabilities and options for restriction of their use to only vehicles moving to and from an FMD Control Area • Determine expectations for exterior truck cleaning and disinfection protocols • Work with industry to determine an appropriate layout for C&D station • Communicate with processors the idle regulations of the state • Identify training resources for farm personnel to safely and effectively implement protocols • Work with environmental protection to determine acceptable and feasible run-off collection procedures • Determine the frequency and personnel who will monitor dairy premises biosecurity procedures during an outbreak; this should be accounted for in the ICS structure. • Determine acceptable 	<p>obtain the necessary training to safely and effectively implement protocols</p> <ul style="list-style-type: none"> • <i>Premises:</i> Determine resources needed to accomplish task • <i>Premises:</i> Work with appropriate state and federal agencies to determine acceptable and feasible run-off collection procedures • <i>Premises:</i> Work with environmental and health authorities, ideally pre-event, to discuss disinfection protocols, including appropriate contact times in various weather conditions • <i>Premises:</i> Plan for inclement weather (extreme heat, extreme cold, excessive rain) • <i>Premises and haulers:</i> Prepare to have PPE available for the C&D station and haulers exiting the cab after crossing the LOS • <i>Haulers:</i> Obtain accurate contact information to ensure farm personnel are available when tanker arrives • <i>Haulers:</i> Be prepared for delays due to length of time

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
	<p>water, 15-20 gallons of citric acid and took approximately 30 minutes to fully clean and disinfect.</p> <ul style="list-style-type: none"> • Importance of C&D compliance and training materials could be provided through a variety of entities; Examples: milk hauler associations, state and national cattle associations, SMS website, state officials • Identification and mapping existing truck wash facilities with capabilities should be one step in response planning • Some external contamination may be unavoidable but this can be mitigated by the C&D at the farm before crossing the Line of Separation. • Provisions for how to meet this standard when snow and ice impact the environment and temperatures will need to be decided upon 	<p>accommodations for inclement weather with industry</p> <ul style="list-style-type: none"> • Determine frequency and personnel resources necessary to monitor tanker cleanliness; communicate this with industry. 	<p>for C&D of tanker exterior on farm</p> <ul style="list-style-type: none"> • <i>Haulers:</i> Communicate with government regarding idle regulations • <i>Haulers:</i> Determine feasible accommodations for inclement weather and discuss with government
<p><i>5.4.2 Milk haulers/drivers in trucks/tankers that cross the LOS (multi-farm pickups or empty loading): the performance standard is to minimize the need for the milk hauler/driver to exit the cab.</i></p> <ul style="list-style-type: none"> • This PS is designed to decrease driver/hauler exposure to the farm and vice versa 	<ul style="list-style-type: none"> • Requires a licensed weigher/sampler available on the dairy premises to provide the farm-side steps of milk pickup. • Insurance/risk managers of hauling companies may be willing to balance the liability of having dairy farm personnel disconnect/connect trailers and tractors with the risk of the hauler/driver exiting the cab becoming contaminated during an FMD outbreak. • Standard Operating Procedures should be established for farm personnel that describe the steps to disconnect/connect tankers to tractors 	<ul style="list-style-type: none"> • Determine if your state milk licensing agency will allow on-farm weighers/samplers to undergo training pre-event. • Discuss with industry the basis of payment and if that needs to change in an emergency in the event a licensed weigher/sampler is not available for the dairy premises 	<ul style="list-style-type: none"> • <i>Premises:</i> Work with your state licensing agency to have one or more weigher/samplers trained pre-event. • <i>Premises:</i> Ensure farm personnel obtain the necessary training to safely disconnect/connect tankers • <i>Haulers:</i> Work with insurance companies and risk managers pre-event to determine if dairy farm personnel can disconnect/connect trailers • <i>Haulers:</i> Obtain accurate farm contact information to ensure farm personnel are available when tanker arrives
<p>6.1 Establishing Traffic Patterns on the Processing</p>	<ul style="list-style-type: none"> • To trace movements, multiple options could be utilized depending on requirements by officials, resources 	<ul style="list-style-type: none"> • Determine what information must be collected at the 	<ul style="list-style-type: none"> • <i>Haulers:</i> Be prepared to provide

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p>Plant Premises</p> <p><i>6.1.1 Before entry, the performance standard is for dairy plant personnel to record all vehicle and people movements involving raw dairy products.</i></p> <ul style="list-style-type: none"> • This PS is designed to enhance trace-back and trace-forward information 	<p>available and capabilities of industry; Examples: GPS on trucks, electronic weigh bills, preprinted labels carried by the haulers and left on farm, information on permit carried by hauler, etc.</p> <ul style="list-style-type: none"> • Traffic control will vary between plants. How this is best accomplished will depend upon the location, layout and normal traffic flow of a plant. 	<p>processing plant and in what format</p> <ul style="list-style-type: none"> • Communicate expectations to industry (premises, haulers and processors) 	<p>details as required by the IMT</p> <ul style="list-style-type: none"> • <i>Processors:</i> Review plant lay out and determine how access to the plant is best accomplished. Incorporate that information into the plant FMD response plan.
<p>6.2 Raw Milk Tanker Exterior Cleaning and Disinfection</p> <p><i>6.2.1 The performance standard is for processing plant officials and animal health officials to work together to determine the best options for tanker C&D to reduce FMD virus spread that aligns with response goals, local capabilities and regulations..</i></p> <ul style="list-style-type: none"> • This PS is designed to prevent potential cross contamination 	<ul style="list-style-type: none"> • The BEST PRACTICE is for raw milk trucks/tankers to have their exterior surfaces, tires, undercarriage, and storage compartment cleaned and disinfected with the goal of removing any material that may contain FMD virus from conveyances before picking up milk at subsequent dairy premises with susceptible animals. • Establishing C&D station locations will vary between plants. • State Animal Health Officials (SAHOs) and processors should discuss feasible options for achieving this PS in the local setting; including at an off-site location that is in close proximity to the plant entrance • Waste water will need to be managed per local/state regulations • Local climatic conditions need to be considered when determining the SOP to accomplish this PS • Processing plant written plans or proposed options should be reviewed by and discussed pre-event with government officials from all states that ship milk to that plant 	<ul style="list-style-type: none"> • Communicate expectations and any available resources with industry, accounting for local and inclement weather conditions • Review and pre-approve processing plant specific biosecurity plans to speed implementation during an actual outbreak • Partner with industry to develop and provide training to ensure processing plant personnel are safely and effectively implementing the recommended protocols • Determine the frequency and personnel who will monitor processing plant biosecurity procedures during an outbreak; this should be accounted for in the ICS structure. 	<ul style="list-style-type: none"> • <i>Processors:</i> Develop a site specific FMD response plan which meets the BPS. Review/share plan with local/regional animal health officials for pre-approval if possible. • <i>Processors:</i> Determine state and local regulations for waste water management when developing FMD plan • <i>Processors:</i> Partner with government to ensure personnel obtain the necessary training to safely and effectively implement protocols

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p>6.3 Milk Haulers/Drivers at the Processing Plant</p> <p><i>6.3.1 Exiting the cab of the tanker, the performance standard is to prevent raw milk from contacting exposed skin, street clothing, and footwear.</i></p> <ul style="list-style-type: none"> • This PS is designed to prevent potential FMD virus contaminating the milk hauler who may travel to multiple dairy premises in a work shift 	<ul style="list-style-type: none"> • Determine whether the processing plant or hauler will be responsible for supplying the protective wear, and any additional backup protective wear. • Early in an outbreak, supplies may be hard to rapidly obtain from a supplier; determine acceptable protective wear barriers to protect the hauler from contaminating their clothing and footwear with raw milk • Importance of compliance and training materials could be provided through a variety of entities; Examples: milk hauler associations, state and national cattle associations, SMS website, state officials, incorporated into licensed milk sampler/hauler training at the state level, etc. 		<ul style="list-style-type: none"> • <i>Haulers and Processors:</i> Determine options and have a plan to obtain resources needed to accomplish tasks • <i>Processors:</i> Incorporate procedures for obtaining and expectations for wearing necessary protective wear into plant FMD response plan • <i>Haulers:</i> Obtain necessary training to effectively implement protocols
<p>6.4 Personnel Involved in Raw Milk Receiving</p> <p><i>6.4.1 Plant personnel or haulers responsible for tasks involving raw milk contact (collecting tanker sample for antibiotic screening, off-loading/assisting with off-loading/cleaning pumps, hoses, and collection equipment working in the lab), the performance standard is to prevent raw milk on their clothing</i></p>	<ul style="list-style-type: none"> • Raw milk can contain the FMD virus and cross contamination between raw milk and finished product areas should be avoided. Many plant protocols already account for this due to other concerns. • Clothing and footwear worn while in raw milk areas must not be worn around susceptible animals; plants need to build in prevention practices into their FMD response plan to prevent contaminated clothing from leaving the plant premises. 		<ul style="list-style-type: none"> • <i>Processors:</i> Develop plans for personnel handling raw milk to ensure their clothing and footwear does not get worn around susceptible animals or cross paths with finished product personnel.

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
<p><i>and footwear from leaving the designated raw milk handling areas of the plant.</i></p> <ul style="list-style-type: none"> • This PS is designed limit cross contamination between raw milk and finished products and to prevent potential FMD virus leaving the dairy processing plant 			
<p><i>6.4.2 When collecting tanker samples, the performance standard is to not spill milk on the outside of the tanker.</i></p> <ul style="list-style-type: none"> • This PS prevents raw milk contamination on the exterior of the tanker and thus, less potential infectious burden to require C&D. 	<ul style="list-style-type: none"> • Common practice currently is to dump the residual milk from the collection down the side of the milk tanker. • A collection bucket could be placed in the area to capture the residual milk. 		<ul style="list-style-type: none"> • <i>Processors:</i> The plant FMD response plan should include options for capturing milk instead of dumping it down the side of the tanker.
<p><i>6.4.4 After off-loading milk, the performance standard is to ensure no residual raw milk in the tanker and hose leaks upon leaving the processing plant.</i></p> <ul style="list-style-type: none"> • For tankers picking up milk from more than one farm with CIP between off-loads, this PS is 	<ul style="list-style-type: none"> • Complete CIP of the tanker after each off-load may not be possible in many situations • A sanitary rinse may not be possible due to the lack of a permit for waste water disposal. • It has been noted that not all plants have CIP on site to clean the interior of the tanker. Per PMO, this normally occurs once per 24 hours. • Full CIP is a time-intensive process (30-40 minutes) that could greatly impact the ability to pick up milk in some parts of the country. A CIP required for each load could increase the daily occurrence by a factor of 6-8 	<ul style="list-style-type: none"> • Determine if a full CIP will be required upon every milk tanker off-load. Communicate decision to industry. • If a full CIP is not required, provide acceptable protocols to industry, including definitions of procedures. 	<ul style="list-style-type: none"> • <i>Processors:</i> Communicate to SAHOs and haulers your capabilities to perform CIP at receiving plants. • <i>Processors:</i> Communicate other challenges, such as high numbers of loads, multiple unloading bays, no waste water permit, etc. with SAHOs and haulers pre-event

Performance Standard (PS)	Factors to Consider and Options	Government Tasks	Industry Tasks
designed to prevent the potential spread of FMD virus between farms	<p>in some areas and lead to issues with waste water amounts.</p> <ul style="list-style-type: none"> • A plan needs to be established for waste water handling; is recapturing it, deactivating it and spreading it an option? Another possibility for emergency waste-water containment is pumping into a secondary tanker, or off-site, sealed location, for later disposal. 		<ul style="list-style-type: none"> • <i>Processors:</i> Identify where tankers that off-load milk can undergo CIP if not on-site
8. APPROVED DISINFECTANTS FOR FMD VIRUS	<ul style="list-style-type: none"> • Obtaining approved disinfectants is an area that all stakeholders need to be involved in • Contact time in various climate conditions needs to be considered • When determining the SOP, determine how often fresh solution needs to be mixed based on product selected, environmental temperature, storage 	<ul style="list-style-type: none"> • Discuss options and communicate what will be made available to industry 	<ul style="list-style-type: none"> • <i>Premises, haulers, processors:</i> Identify a source of disinfectant that is labeled effective against FMD virus. Be prepared to obtain a minimum 4-day supply in the event of an FMD outbreak.
9. PERSONAL PROTECTIVE EQUIPMENT (PPE)	<ul style="list-style-type: none"> • Proper use of PPE requires training pre-event. Ensure personnel involved in C&D and milk handling have the knowledge to properly don, perform tasks, doff, and dispose of PPE. • Training could be developed for various tasks and provided as a resource through milk associations, the SMS website, government agencies, etc. • All stakeholders need to be aware of what supplies are needed, where they can be obtained, and how to properly dispose of items. 	<ul style="list-style-type: none"> • Provide available training resources to industry on PPE during an FMD outbreak aimed at limiting virus spread between animals and locations on people 	<ul style="list-style-type: none"> • <i>Premises, haulers, processors:</i> Identify the supplies needed and maintain a 4-day supply. • <i>Premises, haulers, processors:</i> Ensure personnel are trained to safely and effectively wear, perform tasks, and remove without contaminating street clothes. • <i>Premises, haulers, processors:</i> Develop a plan for proper disposal of all PPE.