Dairy Processing Plants

Biosecurity Performance Standards
Intended to establish expectations to prevent FMD spread. They are the overarching goal by which to develop more specific protocols or procedures. They are designed to be objective, realistic, verifiable, and clearly stated pre-event.

Factors to Consider with Tasks
To aid in pre-event communication, coordination, and planning on a more local/regional level prior to an actual FMD outbreak, factors to consider for some of the Performance Standards, including some possible options or approaches, and tasks for government and industry to address are listed.

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

Purpose
This document provides recommended biosecurity performance guidelines for dairy processing plants to implement in support of rapid permitting for raw milk movement in the event of a foot-and-mouth disease (FMD) outbreak in the United States. Compliance with these performance guidelines is intended to reduce the chance of spreading FMD and increase the chance of timely permitting of raw milk from dairy premises not known to be infected to processing. The implementation of these performance standards will vary by premises based upon the unique features of each location and the final requirements will be established by the Incident Management Team for a specific response.

During an FMD outbreak, local, state and federal decision makers (Incident Management Team) 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, disease transmission, and economic challenges. The performance guidelines here coincide with business continuity response planning by minimizing unintended negative effects of a FMD response on agriculture, while at the same time achieving the goals of disease containment and control.

This document seeks to provide pre-event, agreed upon protocols for raw milk movement from dairy premises not known to be infected located in a FMD Control Area to commercial processing. Establishing and maintaining communications between Incident Command, dairy producers, milk haulers, and processors is essential to convey and assure that biosecurity protocols are being effectively followed. Monitoring and verifying proper biosecurity protocol implementation will be necessary.

Intended Audience
Dairy processors and any allied industries interacting with dairy operations need to be aware of biosecurity protocols which may be required by the Incident Management Team in order to enable raw milk movement 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 their 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
These guidelines are initially focused on developing biosecurity performance standards for dairy processing plants with the intent that details of specific options for achieving these performance standards will be developed at a state or regional level as the project moves forward. These performance standards could be extended to other vehicular movements as permitted in the Control Area.

Overarching Goal
These performance standards are intended to provide guidance which will assure that milk tankers entering milk processing plant premises from dairy premises with no evidence of FMD virus infection within an FMD control area contain no external contamination with FMD virus. Further, they seek to prevent any cross contamination between raw milk potentially contaminated with FMD virus and people, vehicles and processed milk products. Thus, ideally, there will be negligible risk of FMD virus spread from a raw milk processing plant premises.

Initial Focus:
- Raw milk movement from a dairy premises with no evidence of FMD virus infection in an FMD Control Area via milk tanker to processing
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 farms in the Control Area
- Dairy premises with no evidence of FMD virus infection based on visual inspection need to continue to move raw milk to processing
- Biosecurity performance standards as outlined here are being implemented and verified
- 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
- Other product/animal/people movement will be examined as the project develops

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 does not affect humans. 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 not typically death in adults. However, 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).

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/rodents (via contaminated fur, hooves, foot pads), and birds (via contaminated 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);
- **Airborne** virus from infected 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 coveralls, boots, truck tires, manure
• Oral - consuming contaminated feed, 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 has registered commercial disinfectants for use against the foot-and-mouth disease virus. During a large-scale FMD outbreak when there may not be a sufficient supply of readily-available EPA-registered commercial FMD virus disinfectants, the EPA may authorize the use of additional selected chemical disinfectants by the U.S. Department of Agriculture, State Departments of Agriculture, and sometimes farmers and any individual who needs to disinfect surfaces potentially exposed to FMD virus. Disinfectants are only effective if used appropriately. 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. Heating milk to 100°C (212°F) for 20 minutes will inactivate the virus. Ultra-high temperature (UHT) pasteurization (298°F [148°C] for 3 seconds) will completely kill FMD virus in milk. Manure slurry must be heated to 67°C (153°F) for three minutes to destroy FMD virus. For more information about disinfectants, please see section 5.

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 Fact Sheet http://www.oie.int/eng/maladies/Technical%20diseases%20cards/FOOT%20AND%20MOUTH%20DISEASE_FINAL.pdf

2. TERMS
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 tankers once every 24 hour period when in use. Clean-out-of-place (COP) requires equipment be dismantled to clean and sanitize it.

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 on 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 farm to collect the next load of milk.

Disinfection Station – a physical location equipped with adequate water, soap (if vehicle is excessively dirty), effective disinfectant against the disease organism of concern, and the ability to capture or minimize run-off into waterways or 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.

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

Manifolding – equipment needed to transfer the raw milk from the farm bulk tank or other bulk milk source to the milk tanker, generally associated with the tankers milk pump. Includes the crossover hose or pipe (connects tank truck milk pump to tank truck tank valve), clamps and short pipe sections. All of these items contact raw milk.

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 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 farm can become licensed to accomplish these tasks.

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.

Transfer hose – milk hose carried on a tank truck used to transfer milk into the tanker from a farm bulk tank or other bulk milk source when attached to the tank truck’s milk pump.

3. GUIDANCE FOR MILK RECEIVING AT A DAIRY PROCESSING PLANT

3.1 Controlling access to a dairy processing plant premises
All traffic entering the premises (e.g., vehicles, people, etc.) involved in milk receiving should be limited to one designated entry point at the plant. Non-essential traffic should be refused or diverted to another location. The processing plant should post signs directing all road and foot traffic to this entry and informing unauthorized visitors that they are not to enter. This is where the disinfection station for the premises could be located. This disinfection station should be set up and operated by plant personnel. Training should be provided by government and industry partners to ensure personnel are safely and effectively implementing the recommended protocols. This will be periodically monitored by members of the Incident Management Team.

3.2 General guidance for milk processing plant premises
- All milk processing plants should initiate a biosecurity protocol based on the guidance included in this document for the both the physical plant and plant employees.
- Milk processing plants should take necessary precautions to avoid contact of pasteurized milk and milk products and vehicles delivering finished products with any potential source of FMDV infected milk or any vehicles transporting raw milk to the plant.
- The processing plant should institute a practice of moving samples/paperwork, etc… from the receiving room to the processing plant in a manner that does not involve the milk receiver entering the processing plant.
- The plant should enhance vigilance to assure that measures in place to prevent cross contamination from raw milk areas into areas where pasteurized milk or milk products are processed, handled, or stored are explicitly followed.
- If not already part of the plant’s operating protocol, a boot bath, with product effective at killing FMD virus, should be placed between the receiving room and the milk processing section of the plant.
- All employees who come into contact with cloven-hoofed livestock should be advised to arrive at work in clean street clothes and footwear, and then shower (if possible) at the plant prior to changing into their plant issued uniforms and footwear.
3.3 Milk Tanker

3.3.1 Upon arrival at a dairy processing plant premises, the performance standard is removal of all visible contamination on the milk tanker followed by disinfection:

3.3.1.1 The dairy plant premises should have a disinfection station set up at or near the entrance to clean and disinfect all vehicles entering or leaving.
   - The milk hauler/tanker driver should remain in the cab of the milk tanker during the cleaning and disinfection process.
     - If the milk hauler/tanker driver must leave the cab for any reason, protocols under “3.4.1 Upon arrival at the receiving bay” should be followed.
   - Designated personnel should be prepared to clean and disinfect the milk tanker upon entry to the plant premises.
   - This will require proper protective gear, spray equipment, and an approved disinfectant (see sections 4 and 5).
   - All protective gear and equipment should be stored at or near the disinfection station.

3.3.1.2 The transport vehicle should be cleaned (focusing on the tanker lid, sides of the tanker, tires, wheel wells, undercarriage, mud flaps, splash guards, steps) to remove all visible contamination (see section 4).
   - Use the least amount of water necessary.
   - Run-off should be contained so that it is prevented from entering the environment including water sources and animal housing/traffic areas per State regulations.

3.3.1.3 The transport vehicle should be properly disinfected with an approved disinfectant that is applied for the recommended contact time per label directions before entry to the premises.
   - EPA-approved disinfectants against FMD can be found in section 5.

3.3.1.4 Plant personnel should record all vehicle and personnel movements onto and off of the premises including: date, time of arrival and departure, origin of tanker, driver name, vehicle identification, and dairies from which milk was collected from prior to arrival at the plant.
   - This information is obtained from the driver.
   - All movements onto the premises should be maintained and made available to animal health authorities in the event it is needed for a traceback or traceforward investigation.
   - Any evidence of milk on the outside of the transport vehicle should be noted so that this issue can be discussed and the reason resolved prior to future transport by that driver/vehicle.

3.3.1.5 After the tanker is cleaned, the milk hauler/tanker driver can then drive over the scales and weigh-in or proceed to the receiving bay where milk is metered at off-loading.
   - Any milk spillage that occurs at the scales should be cleaned and disinfected prior to the next use following the same cleaning and disinfection protocols described above for the transport vehicle.

3.3.1.6 When possible, the milk hauler/tanker driver should remain in the cab until the processing plant personnel have collected a milk sample from the tanker and cleared it for off-loading.
   - If the milk hauler/tanker driver must leave the cab for any reason, protocols under “3.4.1 Upon arrival at the receiving bay” should be followed.

3.3.1.7 Milk receivers responsible for any tasks involving raw milk contact (collecting tanker sample for antibiotic screening, off-loading/assisting with off-loading/cleaning pumps, hoses, collection equipment), should prevent any raw milk cross-contamination between loads
   - Clothing – plant-dedicated or protective outerwear
     - Should plant-dedicated clothing become contaminated with raw milk, it should be changed prior to receiving the next load
     - Protective outerwear should cover the legs, arms, torso, head and neck.
     - Protective outerwear should be disposable or waterproof to withstand washing and disinfection while being worn.
Protective eyewear should be available to the receiving personnel if wearing waterproof outerwear that will be disinfected after use to prevent splashes of disinfectant into the eyes.

- Protective footwear
  - Protective footwear should cover the shoes and socks.
  - Protective footwear should be disposable or waterproof to withstand washing and disinfection while being worn.
  - If disposable outerwear is worn, the pant legs of the protective outerwear should be tucked into the protective footwear and the tops of the footwear sealed.
  - 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.

- Gloves
  - The gloves should be disposable or waterproof to withstand washing and disinfection while being worn.

3.3.1.8 Milk receivers should take great care to not spill any milk on the outside of the milk tanker as the tanker sample is collected.

- The first two samples should be poured into a collection bucket which can later be disinfected, neutralized and then poured into a sanitary sewer.
- Any milk spillage should be immediately cleaned and disinfected.
- Sample collection areas and equipment should be cleaned and disinfected in between each tanker with a food grade disinfectant that is effective against FMD.

3.4 Milk Haulers and Milk Tanker Drivers

Only the licensed milk hauler is allowed to be present in the cab of the transport vehicle as it enters the milk processing plant premises. The cab should be considered and maintained as a clean, non-contaminated zone. Milk haulers should carry a supply of protective outerwear and footwear with them on their routes. They should also carry a supply of approved disinfectant (see section 5). NOTE: Due to transportation regulations, the disinfectant should not be stored in the cab or with any milk samples.

3.4.1 Upon arrival at the receiving bay, if the hauler/driver needs to leave the cab of the tanker, the performance standard is to have only clean, protective footwear/clothing/gloves enter the processing plant premises and no direct contact with other personnel:

3.4.1.1 Haulers responsible for any tasks involving raw milk contact (off-loading/assisting with off-loading/cleaning pumps, hoses, collection equipment), should put on protective outerwear before stepping away from the driver’s door area to prevent contamination of street clothes.

- The protective outerwear should cover the legs, arms, torso, head and neck.
- The protective outerwear should be disposable or waterproof to withstand washing and disinfection while being worn.
- Protective eyewear should be available to the milk hauler if wearing waterproof outerwear that will be disinfected after use to prevent splashes of disinfectant into the eyes.

3.4.1.2 All haulers exiting the cab should put on protective footwear before stepping away from the driver’s door area to prevent contamination of street shoes.

- The protective footwear should cover the shoes and socks.
- The protective footwear should be disposable or waterproof to withstand washing and disinfection while being worn.
- If disposable outerwear is worn, the pant legs of the protective outerwear should be tucked into the protective footwear and the tops of the footwear sealed.
- 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.
3.4.1.3 All haulers exiting the cab should put on gloves before exiting the milk tanker to prevent contamination of hands.
   - The gloves should be disposable or waterproof to withstand washing and disinfection while being worn.
   - Haulers responsible for any tasks involving raw milk contact should obtain an extra pair of gloves that will be placed in a disinfectable outer container (plastic bag) and taped to the protective outerwear.

3.4.1.4 If on farm bulk tank samples were collected, the driver will provide the labeled sample collection vial(s) and previously disinfected container(s) (plastic sealable bag) to designated plant personnel.

3.4.1.5 Haulers responsible for any tasks involving raw milk contact (off-loading/assisting with off-loading/cleaning pumps, hoses, collection equipment), should dispose of or disinfect contaminated protective outerwear/footwear once tasks are complete.
   - Contaminated disposable outerwear/footwear should be disposed of properly within the receiving bay prior to entering the cab of the tanker (see steps under 3.4.4.1)
   - Contaminated disposable outerwear/footwear should not be worn in any other areas of the processing plant.
   - Adhere to all plant protocols designating foot traffic and use of facilities.

3.4.1.6 Haulers not responsible for any tasks involving raw milk contact (off-loading or cleaning pumps/hoses/collection equipment), should go directly to, then remain in, the designated area (break room).
   - Haulers should have no direct contact with processing plant personnel, raw milk handling equipment, or other milk transport vehicles.
   - Haulers should not enter the milk processing area.
   - Adhere to all plant protocols designating foot traffic and use of facilities.

3.4.1.7 Processing plants should keep a supply of protective wear (boots, gloves) in the event the hauler’s supply becomes depleted, damaged, or excessively contaminated.

3.4.2 During off-loading milk, the performance standard is to address raw milk spills immediately:

   3.4.2.1 Raw milk spilled on the ground during the connection/disconnection of the transfer hose(s) should be disinfected as soon as all connections are made and before personnel walk through the area (see Section 4).

3.4.3 After off-loading milk, the performance standard is to ensure no residual raw milk in the tanker and hoses leaks upon leaving the receiving bay at the processing plant:

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

   3.4.3.2 In the absence of full CIP or performing a sanitary rinse of the tanker after each off-load, all access points to raw milk on the tanker should be completely sealed to prevent leaking.
   - 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.
   - Residual milk may leak on subsequent dairy premises pickups; Section 3.3.3 of the Milk Hauler Biosecurity Performance Standards document (18 Dec 2011) provides the guidance to mitigate this on a dairy premises).
3.4.3.3 Once the tanker is externally cleaned and disinfected as per section 3.4.4.2 of this document, it should be permitted to move to the next location.

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

3.4.4 Upon leaving a dairy processing plant premises, the performance standard is removal of all visible contamination leaving the plant, either on the tanker or milk hauler/tanker driver:

3.4.4.1 Before entering cab of milk tanker, milk hauler should remove or disinfect protective outer clothing and footwear

- Disposable:
  - Remove footwear first, gloves next, and outerwear last.
  - Handle the outerwear with the ‘inside out’ principle – only touch the inner surfaces to remove it so as not to contaminate hands.
  - Outerwear and footwear should be disposed of in a manner that does not contaminate personnel, equipment, or animals (option: before entering cab, place in a plastic biohazard bag in a designated location for proper disposal).

- Waterproof
  - Protective eyewear is recommended when waterproof clothing is worn to prevent splashing disinfectant into eyes upon decontamination.
  - From top to bottom, spray approved disinfectant so that it contacts all potentially contaminated surfaces of the outerwear, gloves, and footwear.
  - Allow the recommended contact time.
  - Outerwear and footwear may remain on the milk hauler; gloves should be removed and disposed of on the dairy plant premises in an appropriate manner.
  - After removal, protective eyewear should be disinfected using the hauler’s spray equipment and stored in the cab of the tanker.
  - Another option is to leave the cleaned and disinfected waterproof protective wear at the processing plant to be worn upon next delivery.

3.4.4.2 The milk tanker should go through the same cleaning and disinfecting steps when leaving the plant premises as upon entry.

- See 3.3.1.1 through 3.3.1.3 for specific details.

4. CLEANING AND DISINFECTION

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 5. Proper cleaning procedures are essential in order for the disinfectant to adequately contact the virus and have time to inactivate it.

4.1 Proper Cleaning Procedures for Vehicles

4.1.1 Wear personal protective equipment

- Gloves, coveralls, rubber or disposable boots, and goggles and a mask if you are generating splashes (eye protection) or dust (respiratory protection).

4.1.2 Soak the most visibly contaminated areas to aid in washing

- Soak the area with water and a detergent or cleaning agent (soap) starting with the dirtiest area and working towards 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 roll the vehicle forward slightly to ensure the tire contact surface is soaked.

4.1.3 **Wash**

4.1.3.1 **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.
- 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.
- Decontamination exercises in North Carolina have shown that approximately 125-150 gallons of water are needed with a time requirement of 19 minutes for large milk tankers.

4.1.4 **Rinse**

4.1.4.1 **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.**

4.2 **Proper Disinfection Procedures for Vehicles**

4.2.1 **Read the product label**

4.2.1.1 **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.

4.2.2 **Disinfect**

4.2.2.1 **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 tire.

4.2.2.2 **Allow the product adequate contact time (per label directions) with all surfaces to inactivate the virus.**

5. **APPROVED DISINFECTANTS FOR FMD VIRUS**

In the U.S., the Environmental Protection Agency (EPA) regulates disinfectants 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 FMD virus, only a few products are currently labeled for this virus on hard, nonporous, nonfood contact surfaces. There is only one food contact surface sanitizer registered for use against FMD virus. 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 an exemption in place for sodium hypochlorite (bleach), sodium hydroxide and sodium carbonate for use against Foreign Animal Disease (FAD) agents in the event that registered pesticides are not available during an FAD outbreak.

5.1 **Safety**

Follow all safety precautions 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.

5.2 **Contact time**

Before disinfecting, all surfaces must be cleaned (see section 4). 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 tankers) may require reapplication to keep the surface wet for the required contact time. Dairy equipment can be damaged by inappropriate uses of disinfectants, so proper use is critical to destroying the virus while maintaining the equipment.

### 5.3 Proprietary products

EPA registered products with a 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](http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1:1719419566286576).

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<tr>
<th>EPA Reg. No.</th>
<th>Product Name</th>
<th>Company</th>
<th>Active ingredient(s)</th>
<th>Use sites</th>
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<td>1677-129</td>
<td>Oxonia Active</td>
<td>Ecolab, Inc.</td>
<td>Hydrogen peroxide Peroxyacetic acid</td>
<td>Food and mouth disease virus in/on livestock barns, livestock premises, animal quarters, animal cages, milking equipment, dairy equipment, and agricultural premises</td>
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<td>6836-86</td>
<td>Lonza DC 101</td>
<td>Lonza, Inc.</td>
<td>Alkyl dimethyl benzyl ammonium chloride Didecyl dimethyl ammonium chloride Octyl decyl dimethyl ammonium chloride Dioctyl dimethyl ammonium chloride</td>
<td>Foot and mouth disease virus in/on livestock premises, livestock feeding and watering equipment, and livestock equipment</td>
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<td>70060-19</td>
<td>Aseptrol S10-TAB</td>
<td>BASF Catalysts, LLC</td>
<td>Sodium chlorite Sodium dichloroisocyanurate dihydrate</td>
<td>Foot and mouth disease virus in/on animal cages, animal stables, animal feeding/watering equipment, animal equipment, and animal transportation vehicle</td>
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<tr>
<td>70060-30</td>
<td>Aseptrol FC-TAB</td>
<td>BASF Catalysts, LLC</td>
<td>Sodium chlorite Sodium dichloroisocyanurate dihydrate</td>
<td>Foot and mouth disease virus in/on livestock premises, livestock feeding equipment, livestock watering equipment, livestock equipment, livestock transportation equipment, hog barns/houses/parlors/pens, animal quarters, animal cages, animal feeding and watering equipment, animal equipment, animal transportation vehicles, and shoe baths.</td>
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<td>71654-6</td>
<td>Virkon S</td>
<td>E.I. du Pont de Nemours &amp; Company</td>
<td>Sodium chloride Potassium peroxymonosulfate</td>
<td>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</td>
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</tbody>
</table>
5.4 Exemptions for use of registered products
USDA-APHIS has an exemption in place for sodium hypochlorite (bleach), sodium hydroxide and sodium carbonate 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: http://www.aphis.usda.gov/emergency_response/tools_train.shtml - select “Pesticides to use against selected foreign animal diseases”.

5.4.1 Sodium hypochlorite 6.0% (household bleach)
A 1000 parts per million solution of sodium hypochlorite 6.0% is made by adding 1/3 cup of chlorine bleach to 1 gallon of water (reference). Mix thoroughly.
- Recommended contact time is 10 minutes.
- This solution must be mixed fresh prior to each application because it is unstable in warm, sunny conditions (above 59°F).
- 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, 2002).

5.4.2 Sodium hydroxide (lye, NaOH)
A 2% sodium hydroxide solution is made by adding 1/3 cup of NaOH pellets (2.7 ounces of lye) to 1 gallon of cold water. Add lye to the water. Mix thoroughly.
- Recommended contact time is 10 minutes.
- This solution is highly caustic (skin burns, damages metals).
- Use protective clothing (water resistant), rubber gloves, and safety goggles when mixing, handling.
- Always add the lye to the water – NEVER pour the water over the lye.
- Sodium hydroxide may be applied by certified applicators or under the supervision of USDA/PPQ, VMO’s, or State officers that are certified applicators (EPA Quarantine Exemption to USDA, 2002).

5.4.3 Sodium carbonate (soda ash)
A 4% sodium carbonate solution is made by adding 5.33 ounces sodium carbonate to 1 gallon of hot water (or 1 pound to 3 gallons). Mix thoroughly.
- Recommended contact time is 10 minutes.
- Sodium carbonate can be deactivated by hard water.
- The solution is mildly caustic (irritate skin).
- Can dull paint and varnished surfaces.
- Sodium carbonate may be applied by certified applicators or under the supervision of USDA/PPQ, VMO’s, or State officers that are certified applicators (EPA Quarantine Exemption to USDA, 2002).

The SMS Working Group Members thank USDA-APHIS and EPA for reviewing and providing content for Sections 1.5, 4, and 5.

CONTENT IS STILL UNDER REVIEW AND DEVELOPMENT

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The following table highlights the Performance Standards that Working Group Members felt would benefit from pre-event communication, coordination and planning on a more local/regional level prior to an actual event. The standards, factors to consider, some possible options or approaches, and tasks for government and industry to address pre-event are listed. Please refer to the full BPS document for additional details.

<table>
<thead>
<tr>
<th>Performance Standard (PS)</th>
<th>Factors to Consider and Options</th>
<th>Government Tasks</th>
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<tbody>
<tr>
<td>3.3 Controlling access to a Dairy Processing Plant Premises</td>
<td>• This PS is designed to ensure traffic is monitored and only authorized vehicles enter.</td>
<td>• Communicate expectations and any available resources with industry, accounting for local and inclement weather conditions</td>
<td>• Processors: Review plant lay out and determine how access to the plant is best accomplished. Incorporate that information into the plant FMD response plan.</td>
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<tr>
<td>3.3.1 Upon arrival at a dairy processing plant premises, the performance standard is removal of all visible contamination on the milk tanker followed by disinfection.</td>
<td>• Establishing cleaning and disinfection stations 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. • This PS may only need to be performed once if trucks can leave the unloading bay via an uncontaminated exit. • Industry and SAHOs should discuss options for verification of 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.</td>
<td>• 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.</td>
<td>• Processors: Develop a site specific FMD response plan which meets the biosecurity PS. Review/share plan with local/regional animal health officials for pre-approval if possible. • Processors: Determine state and local regulations for waste water management when developing FMD plan.</td>
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<tr>
<td>3.3.1.1 The dairy plant premises should have a</td>
<td>• This may vary based upon climatic conditions and truck idle regulations in some states. The driver should remain in the vehicle</td>
<td>• Communicate with processors the idle regulations of the state.</td>
<td>• Processors: Communicate with government regarding whether...</td>
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<td>disinfection station set up at or near the entrance to clean and disinfect all vehicles entering or leaving. • The milk hauler/tanker driver should remain in the cab of the milk tanker during the cleaning and disinfection process.</td>
<td>if possible. • If haulers need to exit the vehicle, they should do so per 3.4.1.</td>
<td>haulers should leave the cab during disinfection. • Processors and haulers: Prepare to have protective wear available if needed • Processors: Include info in FMD response plan</td>
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<td>3.3.1.5 After the tanker is cleaned, the milk hauler/tanker driver can then drive over the scales and weigh-in or proceed to the receiving bay where milk is metered at off-loading.</td>
<td>• In some states weigh master rules require that the driver exit the cab for weigh-in. In an emergency it would be advisable to consider waiving that requirement to minimize the number of times a driver is required to exit the vehicle to minimize the number of times a driver is required to wear protective wear. • Processor: Determine likelihood and approval process for altering the rules in an emergency and communicate that to industry</td>
<td>• Processors: Incorporate hauler options into the plant FMD response plan based on input from government</td>
<td></td>
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<tr>
<td>3.3.1.8 Collection of milk tanker sample for antibiotic screening • The milk receiver should take great care to not spill any milk on the outside of the milk tanker as the sample is collected.</td>
<td>• 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.</td>
<td>• Processor: The plant FMD response plan should include alternatives to capturing milk instead of dumping it down the side of the tanker.</td>
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### Performance Standard (PS)

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| 3.4 Milk Haulers and Milk Tanker Drivers | • Determine if, and what, resources will and will not be made available to industry, communicate this with industry.  
  • SAHOs should communicate with federal officials to determine steps to enter into buying contracts to purchase PPE.  
  • Work with the department of transportation to determine any regulations to carrying disinfectant and communicate findings with industry. | **Haulers**:  
  Determine options to carry protective outerwear, footwear, and disinfectant  
  **Haulers**: Have a plan to obtain resources in an FMD outbreak. |

#### 3.4.1 Upon arrival at the receiving bay, if the hauler/driver needs to leave the cab of the tanker, the performance standard is to have only clean, protective footwear/clothing/gloves enter the processing plant premises and no direct contact with other personnel.

- All entities (premises, haulers, processors and government) should determine the responsible party for obtaining the necessary protective outerwear, footwear, disinfectants, and disinfection equipment and communicate these expectations prior to a response.
- Early in an outbreak, supplies may be hard to rapidly obtain from a supplier; determine acceptable barriers to protect the hauler from contaminating their clothing and footwear with raw milk.
- Determine whether the processing plant or hauler will be responsible for supplying the protective wear, and any additional backup protective wear.
- Brainstorming a suggested/required supply list that can be distributed to haulers/processors to have on hand in case of an outbreak will be helpful; Examples: lab coats, butchers apron, garbage bag with head/arm holes, palpation sleeves, gloves, plastic boots, etc.
- Importance of compliance and training materials could be provided.

- Dairy processors should keep a supply of protective wear (boots, gloves) in the event the hauler’s supply becomes depleted, damaged,

#### 3.4.1.7 Dairy processors should keep a supply of protective wear (boots, gloves) in the event the hauler’s supply becomes depleted, damaged,
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<td>or excessively contaminated.</td>
<td>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.</td>
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<td>3.4.3 After off-loading milk, the performance standard is to ensure no residual raw milk in the tanker and hoses leaks upon leaving the receiving bay at the processing plant:</td>
<td>• It has been noted that not all plants have CIP on site to clean the interior of the tanker. Per PMO, this has to occur 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 in some areas.  • A sanitary water rinse to remove residual milk has been suggested; more information (risk assessment) is needed to understand effectiveness.  • Residual milk that leaks from a tanker can be managed both at the plant and on farm per steps included in the Milk Tanker and Milk Processing Plant BPS documents.  • Definitions of specific protocols that are appropriate for use, such as manual rinsing compared with high-pressure and volume rinses should be established if full CIP is not required  • The effect of washing hoses, pumps, etc. in lieu of CIP should be determined  • 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.</td>
<td>• Determine if a full CIP will be required upon every off-load. Communicate decision to industry.  • If a full CIP is not required, provide acceptable protocols to industry, including definitions of procedures.</td>
<td>• Processors: Communicate capabilities to perform CIP on every load of raw milk delivered to SAHOs and haulers.  • Processors: Communicate other challenges, such as high numbers of loads, multiple unloading bays, no waste water permit, etc. with SAHOs and haulers pre-event  • Premises: Residual milk may leak on subsequent dairy premises pickups and producers receiving these tankers need to be aware of that possibility. Communicate with processors any concerns. There is a mitigation step in the Milk Tanker and Dairy Premises Biosecurity Performance Standards documents (24 Aug 2011).</td>
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<td>3.4.4 Upon leaving a dairy processing plant premises, the</td>
<td>• Same as 3.5.1, also:  • This step may be unnecessary if the tanker enters clean and cross-contamination is prevented  • Proper disposal of outerwear must</td>
<td></td>
<td>• Processors: Determine traffic pattern that will prevent cross-contamination and</td>
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| performance standard is to removal of all visible contamination on the tanker or milk hauler/tanker driver.  
- This PS is designed to prevent potential FMD virus leaving the dairy processing plant | be determined – disinfecting, burning, burying, etc. | industry | include that in the plant FMD response plan to share with government  
- Processors: Have a dedicated storage area available for waterproof outerwear should this be the option selected |
| 5. Approved Disinfectants for FMD Virus | - Obtaining approved disinfectants is an area all involved need to determine  
- 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  
- Some products have a USDA-APHIS exemption for use and only USDA personnel may use it as described; communicate with USDA prior to an event about proper use | - Discuss options with USDA and communicate what will be made available to industry | |
| Other considerations and questions posed by WG members: | - Additional planning is needed to clarify how to handle milk sample pick up by sample transport couriers  
- Who is responsible for getting processors in a Control Area to take and process milk if it is not from their own producers?  
- What role will farm inspectors have during an FMD outbreak?  
- Any specific protocols for sanitizing the sample dippers before leaving farm? | | |