

# SMS Plan Recommendations for Milk Handling during an FMD Outbreak

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## Introduction

Foot and mouth disease (FMD) is a highly contagious foreign animal disease that infects cattle and other cloven-hooved livestock, such as swine, sheep, goats, and deer. Cattle can shed FMD virus in their milk 2-4 days prior to the onset of clinical signs. However, FMD is not a public health or food safety concern. The United States eradicated FMD in 1929 but this disease is present in many other countries and causes severe production losses in animals. If FMD were diagnosed in the U.S., response strategies for controlling and stopping the spread of this animal disease may include stopping movement of susceptible species and their products, including milk. The Secure Milk Supply (SMS) Plan provides a workable continuity of business (COB) plan for dairy premises with no evidence of FMD infection to move raw milk to processing that is credible to Responsible Regulatory Officials (local, state, tribal, and federal officials, as appropriate) and is available at [www.securemilksupply.org](http://www.securemilksupply.org). Milk processors are essential to the success of business continuity for the dairy industry during an FMD outbreak and this document provides recommendations for processing milk during an FMD outbreak in the United States.

## FMD Virus Survivability in Milk and Milk Products

Cows may shed FMD virus in the milk before they show clinical signs. It must be assumed that, in some cases, milk from infected and undetected herds will enter the human food chain. “In contrast to raw milk, no outbreaks have ever been attributed to pasteurized dairy products.”<sup>1</sup> Milk processing per the FDA [Grade “A” Pasteurized Milk Ordinance \(PMO\)](#) assures milk and milk products are safe and wholesome for human consumption. These same principles apply to milk that meets all quality PMO standards from an FMD affected herd. The potential for FMD transmission to animals occurs when raw or single high-temperature, short-time (HTST) pasteurized milk or milk products are fed to animals without additional processing.

A literature review examining the effects of commercial processing of dairy products (pasteurization, homogenization, evaporation, pH changes, drying, and filtration) on the inactivation of FMD virus in milk products was completed in 2012 and is available at: <http://www.cfsph.iastate.edu/pdf/inactivation-of-foot-and-mouth-disease-virus-in-milk-products>.

The World Organization for Animal Health (OIE) Terrestrial Animal Health Code provides recommendations for treatment of milk for human or animal consumption to be imported from FMD infected countries or zones where an official control program exists (see below and <http://www.oie.int/en/international-standard-setting/terrestrial-code/access-online/>). These same recommendations assure that milk moving from within an FMD Control Area in the U.S. is safe to be moved out of the Control Area and into commerce.

In an FMD outbreak, the U.S. will follow the World Organization for Animal Health (OIE) published standards for the inactivation of FMDV in milk and milk products. The OIE standards for animal consumption are more rigorous than the standards for treating milk and milk products for human consumption because of the role of animals in transmitting disease. These recommendations should be followed in a U.S. outbreak out of an abundance of caution. Also, a “Risk Assessment of Foot-and-Mouth Disease Virus Spread via Pasteurized Dairy Products from cattle in the United States after an FMD Incursion” was conducted by Dr. Aaron Scott of the USDA in 2003 (unpublished). The conclusion of that risk assessment was that the risk of spread of FMDv by pasteurized dairy products is **negligible**.

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<sup>1</sup> Donaldson AI, Gibson CF, Oliver R. Infection of cattle by airborne foot-and-mouth disease virus: Minimal doses with O1 and SAT2 strains. *Res Vet Sci*; 1987;43:339-346.

# **Milk Handling Recommendations during an FMD Outbreak**

## **Recommendation 1:**

- **Processing of milk from a Control Area must always include pasteurization.**

## **Recommendation 2:**

- **Milk originating from farms with no evidence of infection within an FMD Control Area that has been treated to OIE standards for either human or animal consumption, may leave the FMD Control Area and enter commerce for either human or animal consumption.**

## **Recommendation 3: It is NOT necessary to recall from commerce:**

- **Milk and milk products originating in an FMD Control Area that were treated to OIE standards for human consumption**
- **Milk and milk products originating in an FMD Control Area that were treated to OIE standards for animal consumption**

## **Recommendation 4: Recall from commerce and destroy:**

- **Milk and milk products for animal consumption that may have originated from an infected herd and that were not treated to OIE standards**

## **Acknowledgments**

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## **Comments**

Please send comments or suggested edits for improvement to: [smsinfo@iastate.edu](mailto:smsinfo@iastate.edu)

## **Additional Resources**

The Secure Milk Supply website has additional resources available at: [www.securemilksupply.org](http://www.securemilksupply.org)

## **OIE standards for processing milk to destroy the FMD virus**

The World Organization for Animal Health sets the international sanitary standards for trade in animal products. The standards for treatment of milk for inactivation of the FMD virus from the World Organization for Animal Health (OIE) Terrestrial Animal Health Code, 2017 are below:

(<http://www.oie.int/en/international-standard-setting/terrestrial-code/access-online/>)

### **Article 8.8.25.**

#### **Recommendations for importation from FMD infected countries or zones where an official control programme exists for milk and milk products**

*Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

1. these products:
  - a. originate from *establishments* which were not infected or suspected of being infected with FMD at the time of *milk* collection;
  - b. have been processed to ensure the destruction of the FMD virus in conformity with one of the procedures referred to in Article 8.8.35 and in Article 8.8.36;
2. the necessary precautions were taken after processing to avoid contact of the products with any potential source of FMDV.

### **Article 8.8.35.**

#### **Procedures for the inactivation of the FMD virus in milk and cream for human consumption**

For the inactivation of FMDV present in *milk* and cream for human consumption, one of the following procedures should be used:

1. a process applying a minimum temperature of 132°C [270°F] for at least one second (ultra-high temperature [UHT]), or
2. if the milk has a pH less than 7.0, a process applying a minimum temperature of 72°C [161°F] for at least 15 seconds (high temperature - short time pasteurisation [HTST]), or
3. if the milk has a pH of 7.0 or over, the HTST process applied twice.

### **Article 8.8.36.**

#### **Procedures for the inactivation of the FMD virus in milk for animal consumption**

For the inactivation of FMDV present in *milk* for animal consumption, one of the following procedures should be used:

1. the HTST process applied twice; or
2. HTST combined with another physical treatment, e.g. maintaining a pH 6 for at least one hour or additional heating to at least 72°C [161°F] combined with desiccation;
3. UHT combined with another physical treatment referred to in point 2 above.

FMDV = foot and mouth disease virus