

## **VRA 24 - What are the risks of causing a new outbreak of foot and mouth disease (FMD) through collection and transportation of raw milk and raw milk samples from a protection zone or surveillance zone to an authorised milk treatment plant and/or authorised laboratory?**

### **1. SUMMARY OF OVERALL RISK**

*This risk assessment was based on EPIC's generic framework suitable for veterinary risk assessments (VRAs) and the GB Foot and Mouth Disease Code of Practice for hauliers, processors and buyers of milk (subsequently referred to as "the milk industry's code of practice"). This document may require updating as new information becomes available or legislation develops, or if more in-depth assessment is necessary.*

*The purpose of this document is to qualitatively assess the risk of the specified activity in the face of an FMD outbreak in the UK. The assessment includes proposed actions to mitigate the risks associated with the specified activity, and which could form the basis of licence conditions, should the activity be permitted. The summary of overall risk below assumes that the risk mitigation measures in Section 8 are implemented.*

**DEFINITIONS OF RISK LEVEL (OIE 2004, DEFRA 2011):**

**Negligible** So rare that it does not merit consideration

**Very low** Very rare but cannot be excluded

**Low** Rare but could occur

**Medium** Occurs regularly

**High** Occurs very often

**Very High:** Events occur almost certainly

**Overall risk:** The risk of allowing the activity described is **VERY LOW**. This assessment is the combined risks offered by the potential risk pathways, assessed in section 5 below.

POTENTIAL OPTIONS FOR MITIGATING RISK (SEE POINT 8).

### **2. LEGISLATION, DEFINITIONS & ASSUMPTIONS**

Statutory disease control requirements are applicable to livestock premises on suspicion and confirmation of FMD. When suspicion of disease cannot be ruled out, and diagnostic samples are taken, a Temporary Control Zone will be put in place (TCZ) surrounding the suspect premises. On confirmation of disease, a national movement ban (NMB) will be enforced by introducing a national Restricted Zone (RZ). A 3 km Protection Zone (PZ) and 10km Surveillance Zone (SZ) will be implemented which place restrictions on movements and activities around infected premises to prevent spread of disease. Later in the outbreak, restrictions may be relaxed either through reducing the size of the RZ or through allowing some resumption of normal activities under licence within the RZ, SZ or PZ. In this VRA, RZ is used to refer to areas which are within the RZ, but do not also fall within the PZ or SZ

General prohibitions on movement of raw milk and collection and processing activities do not apply if authorised by a licence granted by a veterinary inspector or an inspector at the direction of a veterinary inspector: FMD (Scotland) Order 2006 at Schedule 4 (paragraphs 24, 25, 31 and 32). Disinfectants used must be approved for use by the Diseases of Animals (Approved Disinfectants) (Scotland) Order 2008.

### 3. HAZARD IDENTIFICATION

(a) **Hazard:** FMD virus (FMDV)

(b) **Specific risk:** Milk from the PZ/SZ may contain FMDV. Collection and/or transport of such milk may result in dissemination of FMDV leading to further outbreaks. Release of FMDV from contaminated milk could occur while loading milk tankers, during transport or at unloading\* through spillage of contaminated milk or release of FMDV aerosol. Additional spread of FMDV could occur from external contamination of the tanker. (\*the risks of spreading FMDV at unloading/unpacking are addressed in VRAs 26 and 28)

It is essential that milk continues to be collected from unrestricted dairy farms, as on-farm milk storage capacity is very limited. To avoid the potential spread of FMDV to unrestricted areas, it is desirable that milk from the PZ/SZ is treated/processed as locally as possible. However, due to the specialist facilities required to treat and process milk, there are relatively few such premises and it is likely that milk will have to be moved out of the PZ and/or SZ for treatment elsewhere. Milk treatment/processing can only take place in authorised premises (see VRA 26); milk testing can only take place in authorised laboratories (see VRA 28).

### 4. POTENTIAL RISK PATHWAYS

#### Infection Sources:

- A1 Tankers collecting milk/milk samples are contaminated with FMDV.
- A2 Milk loaded earlier in the collection round is contaminated with FMDV.
- A3 Milk samples are contaminated with FMDV.

#### Risks of transmission:

- B1 Virus passing to uninfected premises along the route of the collection round via contamination on tanker/driver.
- B2 Virus passing to uninfected premises along the route of the collection round via spillage or aerosol dispersal from contaminated milk inside the tanker.
- B3 Virus passing to uninfected premises from externally contaminated milk samples (transported in dedicated box by milk tanker).

### 5. EXPOSURE ASSESSMENT

<b>Factors which are likely to affect this probability of exposure are:</b>	<b>Comments and risk estimates if/where appropriate:</b>
<b>Infection source: A1 Tankers collecting milk are contaminated with FMDV</b>	
<ul style="list-style-type: none"> <li>• Requires tanker/driver to have become contaminated with FMDV at least once during the collection round.</li> </ul>	<ul style="list-style-type: none"> <li>• Milk collection is not permitted from premises where FMD is suspected or confirmed.</li> <li>• Virus shedding is most likely around the time of or shortly after the appearance of clinical signs (Charleston <i>et al.</i> 2011). However, infected livestock may excrete FMD virus for several days before the appearance of clinical signs, potentially leading to transmission or contamination prior to disease detection, particularly in</li> </ul>

	<p>cattle and pigs (Alexanderson <i>et al.</i> 2003, Orsel <i>et al.</i> 2009). Thus tankers collecting milk from apparently unaffected farms may become contaminated with FMDV.</p> <ul style="list-style-type: none"> <li>• The FMD (Scotland) Order 2006, Schedule 4 part 2 requires that the milk collection vehicle must be clean and disinfected before every loading. Thus the tanker is not a source of FMDV at the beginning of the collection round.</li> <li>• Full cleaning and disinfection of the outside of the tanker on leaving each farm, as required by the milk industry's code of practice, will reduce the risk of external contamination to a negligible level.</li> <li>• If any of the milk collected by the tanker contains FMDV, the interior of the tank will be contaminated. The usual cleaning and sterilising routine, carried out after discharge of every load, will reduce the risk of internal contamination to a negligible level.</li> <li>• While on the farm, the tanker driver must wear protective clothing that can be cleansed and disinfected prior to leaving the premises or, in the case of disposable overalls, left at the premises for disposal by the farmer. Appropriate use of protective clothing will reduce the risk of spreading FMDV off the farm to a very low level.</li> <li>• The risk of spreading FMDV along the collection route can be reduced by the following measures detailed in the milk industry's code of practice: the route taken should be planned on the basis of risk, lowest risk premises to be visited first; the tanker must not enter premises where susceptible animals are kept except to collect milk; at the end of the collection round, the milk must be taken directly to a licensed treatment/processing plant.</li> </ul>
<p><b>Infection source: A2 Milk loaded earlier in the collection round is contaminated with FMDV</b></p>	
<ul style="list-style-type: none"> <li>• Requires at least one of the milk collections in the round to have been contaminated with FMDV</li> </ul>	<ul style="list-style-type: none"> <li>• Virus shedding in milk can occur up to four days prior to clinical signs (Burrows 1968). Thus milk from apparently unaffected herds may be contaminated with FMDV.</li> <li>• If contaminated milk from a previous collection is discharged at a non-affected farm later in the collection round, FMDV will be dispersed and may cause further infection. The milk industry's code of practice requires that contamination of hoses and couplings is minimised as far as possible, and that the equipment is</li> </ul>

	<p>cleansed and, where possible, disinfected before leaving the farm. Internal surfaces can only be washed as disinfectant residue would taint milk. Cleaning in line with the code of practice will reduce the risk of transferring contaminated milk to subsequent farms to a low level.</p>
<p><b>Infection source: A3 Milk samples are contaminated with FMDV</b></p>	
<ul style="list-style-type: none"> <li>Requires at least one of the milk collections in the round to have been contaminated with FMDV</li> </ul>	<ul style="list-style-type: none"> <li>Virus shedding in milk can occur up to four days prior to clinical signs (Burrows 1968). Thus milk from apparently unaffected herds may be contaminated with FMDV.</li> <li>Milk samples are collected in sealed, leak-proof containers by the milk tanker driver. The milk industry's code of practice requires that the milk dipper is disposed-of on the farm, also that the outside of the containers are wiped clean of spilt milk, the wipe disposed-of on the farm and the outside of the container is disinfected. Cleaning and disinfection of the outside of the sample containers will reduce the risk of transmission of FMDV to a negligible level.</li> <li>The milk samples are placed in a dedicated pannier for secure transport on the milk tanker. The milk industry's code of practice requires the pannier to be clean and disinfected at the start of the collection round, and for all spills/leaks to be cleansed and disinfected immediately. These measures reduce the risk of FMDV dispersal to a negligible level.</li> </ul>
<p><b>Risk of transmission: B1 Infection passing to uninfected premises along the route of the collection round via contamination on tanker/driver.</b></p>	
<ul style="list-style-type: none"> <li>Tanker/driver contaminated with FMDV can spread infection to susceptible animals</li> </ul>	<ul style="list-style-type: none"> <li>See comments/mitigations listed under A1 above. Provided that the milk industry's code of practice is followed, the risk of FMDV dispersal along the route taken by the milk tanker is reduced to a negligible level.</li> <li>The risk of FMDV spread by the driver can be reduced through use of appropriate protective clothing and by appropriate cleaning and disinfection to a very low level.</li> </ul>
<p><b>Risk of transmission: B2 Infection passing to uninfected premises along the route of the collection round via spillage or aerosol dispersal from contaminated milk inside the tanker.</b></p>	
<ul style="list-style-type: none"> <li>Milk residues in the connecting hoses and couplings could be spilt at the next premises on the collection round and, if contaminated with FMDV, could spread infection to that premises.</li> </ul>	<ul style="list-style-type: none"> <li>The milk industry's code of practice requires that contamination of hoses and couplings is minimised as far as possible, and that the equipment is cleansed and, where possible, disinfected before leaving the farm. Internal surfaces can only be washed as disinfectant residue would taint milk. Cleaning in line with the code of practice will reduce the risk of</li> </ul>

	transferring contaminated milk to subsequent farms to a low level.
<ul style="list-style-type: none"> <li>Milk contaminated with FMDV can give rise to infective aerosols when a milk tanker is loaded or unloaded (Dawson 1970).</li> </ul>	<ul style="list-style-type: none"> <li>Use of approved air filters (detailed in the milk industry's code of practice) prevents dispersal of FMDV when the tanker unloads at the milk treatment/processing plant. The risk of spread is reduced to negligible.</li> </ul>
<b>Risk of transmission: B3 Infection passing to uninfected premises from externally contaminated milk samples (transported in dedicated box by milk tanker).</b>	
<ul style="list-style-type: none"> <li>Milk samples from infected but clinically unapparent dairy herds may contain FMDV. Sample collection and handling of the sample container is likely to result in external contamination of the container with FMDV.</li> </ul>	<ul style="list-style-type: none"> <li>The milk industry's code of practice requires that sample containers are cleansed and disinfected after closure. These measures will reduce the risk of FMDV contamination on the external surface to a negligible level.</li> </ul>

## 6. CONSEQUENCE ASSESSMENT

Spread of disease to uninfected premises.

## 7. RISK MANAGEMENT OPTIONS

The risk in collecting and transporting milk and milk samples from the PZ/SZ is that tankers may become contaminated through entering affected premises and that the FMDV-contaminated milk carried by the tanker is a potential source of infection. However, it is necessary to establish regulated milk collections (licensed vehicles transporting milk to licensed premises) at a very early stage of an outbreak, in order to allow the dairy industry to continue to function. The milk industry's code of practice recognises the risks inherent in milk collection and transport, and in handling of milk samples, and sets out the necessary mitigation. Additional measures to reinforce and clarify the requirements of the code can be made conditions of the licence. Provided that the code and appropriate conditions are observed, there is a very low risk of causing a new FMD outbreak through the collection and transport of milk from the SZ/PZ. The risk of collecting milk samples is very low, provided that the code and appropriate conditions are followed. Given that milk must be collected, sampled and tested during an outbreak, it is suggested that collection and sampling of milk from the PZ and SZ can be permitted, subject to compliance with licences and the milk industry's code of practice.

## 8. SPECIFIED RISK MITIGATION STRATEGIES

collection and transport of raw milk from the SZ/PZ presents a very low risk provided that safeguards are in place. The following risk mitigation measures are suggested:

### **A. prevent transfer of infection to/from any premises on the collection round**

- i) Milk is not collected from premises where FMD is suspected or confirmed.
- ii) Milk tankers are cleansed and disinfected externally on arrival at and on leaving each milk collection point.
- iii) While on the farm, the tanker driver wears protective clothing that is either cleansed and disinfected prior to re-entering the vehicle or is discarded at the farm for disposal by the farmer.
- iv) The route taken by the milk tanker must be strictly in order of disease risk: low risk premises must be visited before entering higher risk farms.

v) Air filters must be fitted to the milk tanker in accordance with the milk industry's code of practice.

Subject to the following additional safeguards, collection and transport of milk samples from the SZ/PZ presents a very low risk and can be permitted under a general licence:

**B. prevent transfer of infection to/from any premises via raw milk samples**

- i) conditions Ai) to iv) above
- ii) The milk dipper is disposed-of at the farm on which it is used.
- iii) The samples are collected in leak-proof containers that are sealed then cleansed and disinfected externally prior to leaving the premises of collection.

It is assumed that relevant legislation applicable during "peacetime" is followed, for example regarding food hygiene and good laboratory practice.

## 9. SOURCES OF EXPERT ADVICE

This VRA was based on:

Great Britain Foot and Mouth Disease Code of Practice for hauliers, processors and buyers of milk, produced by Dairy UK, dated June 2008.

VRA E840077 "What is the risk of spreading FMD by permitting the collection and movement of milk samples from premises in the Restricted Zone to a laboratory for routine quality analysis? Produced by the Veterinary Division, Rural Directorate, December 2009.

## 10. AUTHORS

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## 11. REFERENCES

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Dawson PS (1970) The involvement of milk in the spread of foot-and-mouth disease: an epidemiological study *Veterinary Record* 87 pp543-548.

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## 12. NOTES

None