

# State survey of plans to manage livestock movement during a Foot and Mouth Disease (FMD) outbreak – A USAHA survey of State Animal Health Officials



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## **Introduction**

Managed movement of livestock and potential fomites is critical to limit the spread of the pathogen and extent of the outbreak in the event of a foreign animal disease outbreak. Each State Animal Health Official (SAHO) has the authority to regulate movement of animals across its state borders. The regulation of livestock across state borders can play an integral part of limiting a foreign animal disease outbreak like Foot and Mouth Disease (FMD). A survey was constructed to describe the livestock movement regulations in states throughout the United States.

## **Materials and Methods**

A survey to determine each state's level of preparedness for managing livestock movement in the event of an FMD outbreak was distributed to the each 50 of the SAHOs. The survey was distributed through the United States Animal Health Association utilizing the online survey software SurveyMonkey. The survey was available for approximately 3 weeks from the middle of April 2015 to the beginning of May 2015.

## **Results**

Sixty-one responses were received. Any submissions that were not self-identified by the submitter or traceable to a unique IP address verifying the submission's state of origin were not accepted. Submissions that could be verified as single, unique submissions for states were accepted. For states that submitted multiple responses in various stages of completion, the most complete survey was accepted. Submissions from 37 states were included in the final data set.

See Appendix A for sample survey. All survey participants were first asked "Does your state have a plan for managing livestock movement during an FMD outbreak?" Of the 37 respondents, 30 answered "Yes" and 7 answered "No." The survey software automatically routed the respondents who answered "No" to the demographics questions and concluded their survey. Those 7 respondents were not eligible to answer any of the following survey questions. The 30 remaining respondents were eligible to respond to the second survey question. Responses to the second survey question are described in Table 1.

Nearly two-thirds of the eligible survey respondents indicated that their plan for managing livestock movement during an FMD outbreak is a written document, with 68% of the documents being part of a state-specific general foreign animal disease preparedness and response plan. The majority of respondents who answered that their plan is not a written document indicated that verbal discussions of their response plan have occurred.

**Table 1**

<b>Is your plan a written document?</b>					
Yes n = 19/30 (63%)			No n = 11/30 (37%)		
<b>Where/how is your plan documented?</b>			<b>What form is your plan in?</b>		
	<b>n*</b>	<b>% of 19 respondents</b>		<b>n*</b>	<b>% of 11 respondents</b>
<b>As part of a State-specific General Foreign Animal Disease Preparedness and Response Plan</b>	13	68%	<b>Verbal discussions</b>	7	64%
<b>As a stand-alone FMD response plan</b>	5	26%	<b>Other</b>	3	27%
<b>Built into other SOP's and protocols</b>	4	21%	<b>No responses selected</b>	1	9%
<b>Other</b>	3	16%			
<b>No responses selected</b>	1	5%			

n = number of responses when respondents were only allowed to choose one response

n\* = number of responses when respondents were allowed to choose more than one response

Thirty survey respondents were eligible to answer "Is your plan a written document?" Nineteen respondents answered "Yes" and were routed to the question, "Where/how is your plan documented?" Eleven respondents answered "No" and were routed to the question, "What form is your plan in?" Two survey respondents did not finish selecting answers for the second part of this question. They were then not eligible to answer any subsequent survey questions.

The 28 survey respondents who completed the second survey question were eligible to respond to the third survey question. Responses to the third survey question are described in Table 2. Over half of the eligible survey respondents answered that they address live animal movement and traceability of live animal movement in their plans, and nearly half of the respondents address movement of milk product. The majority of eligible survey respondents indicated that they do not address feed truck movement in their plans.

**Table 2**

<b>If your state has an FMD livestock movement response plan, which aspects are addressed?</b>		
	<b>n*</b>	<b>% of 28 respondents</b>
<b>Live animal traffic into state</b>	19	68%
<b>Live animal traffic out of state</b>	19	68%
<b>Live animal traffic intrastate not originating from a control area</b>	13	46%
<b>Live animal traffic intrastate originating from a control area</b>	20	71%
<b>Traceability through certificates of veterinary inspection</b>	16	57%
<b>Feed/commodity truck traffic into state</b>	8	29%
<b>Feed/commodity truck traffic out of state</b>	7	25%
<b>Feed/commodity truck traffic intrastate not originating from a control area</b>	5	18%
<b>Feed/commodity truck traffic intrastate originating from a control area</b>	13	46%
<b>Milk truck traffic into state</b>	12	43%
<b>Milk truck traffic out of state</b>	12	43%
<b>Milk truck traffic intrastate not originating from a control area</b>	11	39%
<b>Milk truck traffic intrastate originating from a control area</b>	16	57%
<b>Other</b>	7	25%
<b>No answers selected</b>	1	4%

n\* = number of responses when respondents were allowed to choose more than one response

One survey respondent did not select an answer for this question. They were then not eligible to answer any subsequent survey questions.

The 27 survey respondents who completed the third survey question were eligible to respond to the fourth survey question. Responses to the fourth and dependent fifth survey question are described in Table 3. Of eligible respondents 70% indicated that they have not exercised of their movement response plans. Of the eight respondents who have exercised their movement plans, 2 have conducted only discussion-based exercises while 5 have conducted more extensive exercises. In their exercises, all eight of the eligible survey respondents involved: SAHO's, state and local law enforcement, non-animal health government officials, industry associations, and state emergency management. Nearly all of the eligible survey respondents also involved federal animal health officials and local emergency management in their exercises.

**Table 3**

<b>Have you conducted exercises of your movement response plan?</b>		
Yes	n = 8/27 (30%)	No n = 19/27 (70%)
<b>What was the nature of the exercise?</b>		
	<b>n*</b>	<b>% of 8 respondents</b>
Discussion-based	7	88%
Drill	3	38%
Functional exercise	2	25%
Full-scale exercise	3	38%
Other	1	13%
<b>Who was involved in your exercise?</b>		
	<b>n*</b>	<b>% of 8 respondents</b>
State animal health officials	8	100%
Federal animal health officials	7	88%
Local veterinarians	5	63%
State law enforcement	8	100%
Local law enforcement	8	100%
National Guard units	2	25%
State government officials (non-animal health)	8	100%
Federal government officials (non-animal health)	3	38%
Commercial animal transporters	4	50%
Private animal transporters	4	50%
Industry associations	8	100%
Producers	4	50%
Livestock market owners/operators	2	25%
State Emergency Management	8	100%
Local Emergency Management	7	88%
Local, state, or Regional Animal Response teams	4	50%
Neighboring states	5	63%
Non-governmental organizations	3	38%
Other	0	0%

n = number of responses when respondents were only allowed to choose one response

n\* = number of responses when respondents were allowed to choose more than one response

Twenty-seven survey respondents were eligible to answer "Have you conducted exercises of your movement response plan?" Eight respondents answered "Yes" and were routed to the questions, "What was the nature of the exercise?" and "Who was involved in your exercise?" Nineteen survey respondents answered "No" and were routed past the two follow-up questions.

The 27 survey respondents who completed the fourth survey question, and applicable follow-up questions, were eligible to respond to the sixth survey question. Responses to the sixth survey question are described in Table 4. Over half of the eligible survey respondents do not have agreements with their neighboring states regarding the logistics of their movement plan. Nearly two-thirds of the survey respondents that do have agreements with at least some of their neighboring states indicate that all of their agreements are formal agreements in the form of a Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA).

**Table 4**

<b>Do you have formal written or informal agreements with neighboring states on the logistics of your plan?</b>		
	<b>n</b>	<b>% of 27 respondents</b>
<b>Yes, all neighboring states</b>	1	4%
<b>Yes, some neighboring states, but not all</b>	12	44%
<b>No written or informal agreements</b>	14	52%

  

<b>In which forms are your agreements?</b>		
	<b>n</b>	<b>% of 13 respondents</b>
<b>All Formal (MOU or MOA)</b>	8	62%
<b>Some formal and some informal</b>	2	15%
<b>All Informal</b>	3	23%

n = number of responses when respondents were only allowed to choose one response

Twenty-seven survey respondents were eligible to answer “Do you have formal written or informal agreements with neighboring states on the logistics of your plan?” Thirteen respondents answered either “Yes, all neighboring states” or “Yes, some neighboring states, but not all” and were routed to the question, “In which forms are your agreements?” Fourteen survey respondents answered “No” and were routed past this follow up question.

The 27 survey respondents who completed the sixth survey question, and applicable follow-up question, were eligible to respond to the seventh and eighth survey questions. Responses to the seventh and eighth survey questions are described in Table 5. Of the eligible survey respondents 85% indicated that at the beginning of an FMD outbreak, when the first infected premises is outside their state, they will stop livestock movement at the state border, evaluate the source risk, and determine an appropriate response for movement of that shipment. Of the eligible survey respondents 89% indicated that they would continue this approach to managing livestock movement at the state border beyond the first few days of an outbreak. Thirty percent of respondents indicated they would close their state borders to all livestock movement; however, only 2 respondents chose this course of action as their only response during Phase 1 of the outbreak and 1 respondent chose only this course of action during Phase 2.

**Table 5**

<b>When the first infected premises in the United States occurs outside your state, what is your plan to control interstate movement of livestock during Phase 1 of an FMD outbreak?</b>		
	<b>n*</b>	<b>% of 27 respondents</b>
<b>Close borders to all livestock movement</b>	8	30%
<b>Divert all livestock in transit to quarantine sites</b>	3	11%
<b>Stop movement at the border, evaluate source risk, and determine response (e.g. return to origin or allow to continue to destination)</b>	23	85%
<b>Euthanize susceptible species and dispose of carcasses within your state</b>	2	7%
<b>Other</b>	5	19%
<b>When the first infected premises in the United States occurs outside your state, what is your plan to control interstate movement of livestock during Phase 2 of an outbreak?</b>		
	<b>n*</b>	<b>% of 27 respondents</b>
<b>Close borders to all livestock movement</b>	8	30%
<b>Divert all livestock in transit to quarantine sites</b>	3	11%
<b>Stop movement at the border, evaluate source risk, and determine response (e.g. return to origin or allow to continue to destination)</b>	24	89%
<b>Euthanize susceptible species and dispose of carcasses within your state</b>	3	11%
<b>Other</b>	5	19%

n\* = number of responses when respondents were allowed to choose more than one response

**Phase 1** is defined as: The period of time from the confirmation of the first FMD case in the United States until there is reasonable evidence to estimate the extent of the outbreak. The transition to Phase 2 should be accomplished as soon as possible, with a goal of less than 4 days (96 hours)

**Phase 2** is defined as: Surveillance and epidemiology provides timely evidence of the extent of the outbreak (characterized as one of six types) to support planning and decision making by Incident/Area Command

The 27 survey respondents who completed the seventh and eighth survey questions were eligible to respond to the ninth, tenth, and eleventh survey questions. If the survey respondents answered “Yes” to any of these three survey questions, they were routed to a follow-up question. If they responded “No”, they were routed to the next question. If the respondent did not complete all or part of a question, they were not eligible to proceed to the next question. Responses to these survey questions are described in Table 6. Nearly two-thirds of the eligible survey respondents have a plan to manage movement of livestock from non-infected premises within a Control Area in their state in a small outbreak, but less than half of the eligible survey respondents have a plan to manage feed and livestock movement for non-infected premises in a Control Area during a large outbreak where a stamping out strategy cannot feasibly be implemented. Nearly all of the plans for managing the movement of livestock and feed in a Control Area include establishing a permitting system for cattle movement, cleaning and disinfecting trucks, and controlling truck movement.

**Table 6**

<b>When infected premises occur within your state, do you have a plan to manage movement of livestock from non-infected premises within a control area in your state in the event of a Type 1 or Type 2 outbreak that is controlled with a quarantine and stamping out strategy?</b>					
Yes	n = 17/27 (63%)	No	n = 9/27 (33%)	No response	n = 1/27 (4%)
<b>If yes, what does your plan include?</b>					
				<b>n*</b>	<b>% of 17 respondents</b>
<b>Establish a permitting system to assess risk for individual cattle movements</b>				15	94%
<b>Clean and disinfect trucks on and off premises</b>				12	75%
<b>Control truck movement (control area trucks and non-control area trucks)</b>				12	75%
<b>Other</b>				0	0%
<b>No response</b>				1	6%
<b>When infected premises occur within your state, do you have a plan to manage movement of livestock from non-infected premises within a control area in your state in the event of a Type 3 or greater outbreak that cannot be controlled utilizing a stamping out strategy?</b>					
Yes	n = 11/25 (44%)	No	n = 13/25 (52%)	No response	n = 1/25 (4%)
<b>If yes, what does your plan include?</b>					
				<b>n*</b>	<b>% of 11 respondents</b>
<b>Establish a permitting system to assess risk for individual cattle movements</b>				10	91%
<b>Clean and disinfect trucks on and off premises</b>				9	82%
<b>Control truck movement (control area trucks and non-control area trucks)</b>				10	91%
<b>Other</b>				1	9%

**Table 6 continued**

<b>When infected premises occur within your state, do you have a plan to manage movement of feed and supplies to infected premises within a control area in your state in the event that the infected premises is too large to depopulate quickly?</b>			
	Yes	n = 11/24 (46%)	No
			n = 13/24 (54%)
<b>If yes, will you?</b>			
			<b>n*    % of 11 respondents</b>
<b>Establish a permitting system to assess risk for individual cattle movements</b>			11    100%
<b>Clean and disinfect trucks on and off premises</b>			11    100%
<b>Control truck movement (control area trucks and non-control area trucks)</b>			11    100%
<b>Other</b>			1    9%

n = number of responses when respondents were only allowed to choose one response

n\* = number of responses when respondents were allowed to choose more than one response

**Type 1** is defined as: a focal FMD outbreak, focal area of infection limited to one State or small region with low to moderate livestock numbers on relatively small premises

**Type 2** is defined as: a moderate regional FMD outbreak, a few focal areas of infection limited to a region with low to moderate livestock numbers on small to medium size premises

**Type 3** is defined as: a large regional FMD outbreak, multiple areas of infection are detected in a region, or the type, number and/or size of infected and contact herds are too great to depopulate quickly enough to suppress disease spread

Twenty-seven survey respondents were eligible to answer “When infected premises occur within your state, do you have a plan to manage movement of livestock from non-infected premises within a control area in your state in the event of a Type 1 or Type 2 outbreak that is controlled with a quarantine and stamping out strategy?” Seventeen eligible survey respondents answered “Yes” and were routed to the question “If yes, what does your plan include?” Two survey respondents did not finish selecting answers for all or part of this question. They were then not eligible to answer any subsequent survey questions.

Twenty-five survey respondents were eligible to answer “When infected premises occur within your state, do you have a plan to manage movement of livestock from non-infected premises within a control area in your state in the event of a Type 3 or greater outbreak that cannot be controlled utilizing a stamping out strategy?” Eleven eligible survey respondents answered “Yes” and were routed to the question “If yes, what does your plan include?” One survey respondent did not finish selecting answers for all or part of this question. They were then not eligible to answer any subsequent survey questions.

Twenty-four survey respondents were eligible to answer “When infected premises occur within your state, do you have a plan to manage movement of feed and supplies to infected premises within a control area in your state in the event that the infected premises is too large to depopulate quickly?” Eleven eligible survey respondents answered “Yes” and were routed to the question “If yes, will you?”

**Conclusion**

The results of this survey indicate a wide range in the level of preparedness for an FMD outbreak among the states. Readily implementable individual state preparedness plans with a high level of consistency among them are imperative to maintaining business continuity in the event of a foreign animal disease outbreak. The disparity in preparedness levels among the states highlight opportunities for interstate cooperation as well as for cooperation among government agencies and other stakeholders in livestock industries to construct reasonable and implementable emergency preparedness plans to manage the movement of livestock.

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## Appendix A: Sample Survey

### General FMD Response Plan (Please check your answer(s) or describe)

1. Does your state have a plan for managing livestock movement during an FMD outbreak?
  - Yes
  - No (If no, skip to Demographics section Question 12)
  
2. Is this plan a written document?
  - Yes (Complete question 2a)
  - No (Complete question 2b)
    - 2a. If yes, where/how is it documented (check all that apply)?
      - As part of a State specific General Foreign Animal Disease Preparedness and Response Plan
      - As a stand-alone FMD response plan
      - Built into other SOP's and protocols
      - Other (please list)
  
    - 2b. If no, what form is it in (check all that apply)?
      - Verbal discussions
      - Other (please list)
  
3. If your state has a documented FMD livestock movement response plan, which aspects are addressed (check all that apply)?
  - Live animal traffic into state
  - Live animal traffic out of state
  - Live animal traffic intrastate not originating from a control area
  - Live animal traffic intrastate originating from a control area
  - Traceability through certificates of veterinary inspection
  - Feed/commodity truck traffic into state
  - Feed/commodity truck traffic out of state
  - Feed/commodity truck traffic intrastate not originating from a control area
  - Feed/commodity truck traffic intrastate originating from a control area
  - Milk truck traffic into state
  - Milk truck traffic out of state
  - Milk truck traffic intrastate not originating from a control area
  - Milk truck traffic intrastate originating from a control area
  - Other (please list)
  
4. Have you conducted any exercises of the movement response plan?
  - Yes (complete 4a)
  - No (If no, skip to question 6)
    - 4a. If yes, what was the nature of the exercise (check all that apply)?
      - Discussion-based (examples: Seminar, Workshop, Tabletop exercise)
      - Drill (Defined as: An activity used to test a single specific operation or function; example: Check points)
      - Functional exercise (Defined as: An activity designed to test and evaluate individual capabilities, multiple functions, activities within a function, or interdependent groups of functions.)
      - Full scale exercise (Defined as: An integrated multi-agency, multi-jurisdictional, multi-organizational activity that tests many facets of preparedness.)
      - Other (please describe)

5. Who was involved in these exercises (check all that apply)?
- State animal health officials
  - Federal animal health officials
  - Local veterinarians
  - State law enforcement
  - Local law enforcement
  - National Guard units
  - State government officials (non-animal health)
  - Federal government officials (non-animal health)
  - Commercial animal transporters
  - Private animal transporters
  - Industry associations
  - Producers
  - Livestock market owners/operators
  - State Emergency Management
  - Local Emergency Management
  - Local, state, or Regional Animal Response teams
  - Neighboring states
  - Non-governmental organizations
  - Other (please list)
6. Do you have formal written or informal agreements with neighboring states on the logistics of your plan?
- Yes, all neighboring states (Complete 6b)
  - Yes, some neighboring states, but not all (Complete question 6a and 6b)
  - No written or informal agreements
- 6a. Please list which neighboring states you have agreements with
- 6b. In which forms are your agreements with your neighboring states?
- All Formal (MOU or MOA)
  - Some formal and some informal
  - All Informal

**When the first infected premises in the United States occurs outside your state (interstate movement)**

7. What is your plan to control interstate movement of livestock during [Phase 1](#) of an FMD outbreak (check all that apply)? ([Phase 1 is defined as: The period of time from the confirmation of the first FMD case in the United States until there is reasonable evidence to estimate the extent of the outbreak. The transition to Phase 2 should be accomplished as soon as possible, with a goal of less than 4 days \(96 hours\).](#))
- Close borders to all livestock movement
  - Divert all livestock in transit to quarantine sites
  - Stop movement at the border, evaluate source risk, and determine response (e.g. return to origin or allow to continue to destination)
  - Euthanize susceptible species and dispose of carcasses within your state
  - Other (please list)
8. What is your plan to control interstate movement of livestock during [Phase 2](#) of an outbreak (check all that apply)? ([Phase 2 is defined as: Surveillance and epidemiology provides timely evidence of the extent of the outbreak \(characterized as one of six types\) to support planning and decision making by Incident/Area Command.](#))
- Close borders to all livestock movement
  - Divert all livestock in transit to quarantine sites
  - Stop movement at the border, evaluate source risk, and determine response (e.g. return to origin or allow to continue to destination)
  - Euthanize susceptible species and dispose of carcasses within your state

Other (please list)

**When infected premises occur within your state (intrastate movement)**

9. Do you have a plan to manage movement of livestock from non-infected premises within a control area in your state in the event of a [Type 1](#) or [Type 2](#) outbreak that is controlled with a quarantine and stamping out strategy? ([Type 1 is defined as: a focal FMD outbreak, focal area of infection limited to one State or small region with low to moderate livestock numbers on relatively small premises.](#)) ([Type 2 is defined as: a moderate regional FMD outbreak, a few focal areas of infection limited to a region with low to moderate livestock numbers on small to medium size premises.](#))

Yes (complete 9a)

No (If no, skip to question 10)

- 9a. If yes, what does your plan include (check all that apply)?

Establish a permitting system to assess risk for individual cattle movements

Clean and disinfect trucks on and off premises

Control truck movement (control area trucks and non-control area trucks)

Other (please list)

10. Do you have a plan to manage movement of livestock from non-infected premises within a control area in your state in the event of a [Type 3](#) or greater outbreak that cannot be controlled utilizing a stamping out strategy? ([Type 3 is defined as: a large regional FMD outbreak, multiple areas of infection are detected in a region, or the type, number and/or size of infected and contact herds are too great to depopulate quickly enough to suppress disease spread.](#))

Yes (complete 10a)

No (If no, skip to question 11)

- 10a. If yes, what does your plan include (check all that apply)?

Establish a permitting system to assess risk for individual movements

Clean and disinfect trucks on and off premises

Control truck movement (control area trucks and non-control area trucks)

Other (please list)

11. Do you have a plan to manage movement of feed and supplies to infected premises within a control area in your state in the event that the infected premises is too large to depopulate quickly?

Yes (complete 11a)

No (If no, skip to demographics questions)

- 11a. If yes, will you (check all that apply)?

Establish a permitting system to assess risk for individual movements

Clean and disinfect trucks on and off premises

Control truck movement (control area trucks and non-control area trucks)

Other (please list)

**Demographics**

12. Name of person completing this survey:

Position/Job title:

State: