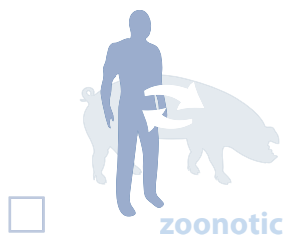
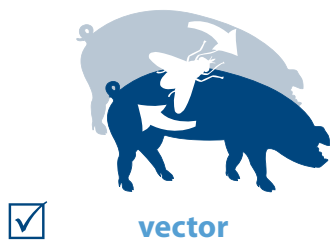
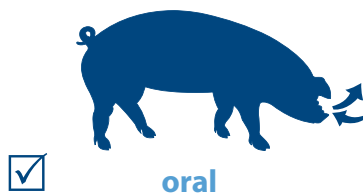
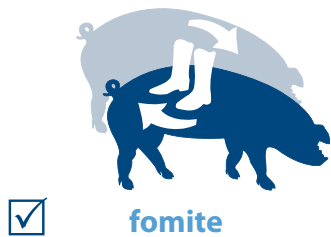
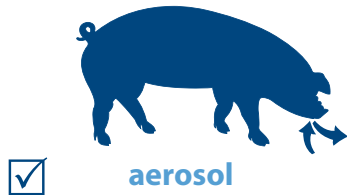


# Classical Swine Fever Prevention Practices

## ROUTE(S) OF TRANSMISSION:



## Introduction

Classical Swine Fever (CSF), also known as hog cholera, is a highly contagious viral disease that affects pigs. The disease has severe economic consequences if re-introduced into the United States.

Signs of illness include:

- Dullness; weakness
- High fever (105 °F)
- Purple discolorations of the skin
- Conjunctivitis (reddened eyes)
- Abortions
- Congenital deformities (piglets)
- Death

This disease does not affect humans.

CSF is primarily spread in pigs by ingestion of contaminated garbage or meat products, by direct contact with infected pigs or transfer from fomites (objects contaminated with body fluids from infected pigs). Other, less common, routes of transmission include aerosol or vector spread (e.g., flies)

The following pages contain information about CSF and prevention practices to use to protect your farm and herd.

## Table of Contents

CSF Fast Facts.....	2
CSF Disease Transmission Routes.....	3
Prevention Practices for CSF .....	4
Appendix A: Signage .....	8
Appendix B: Visitor log .....	9
Appendix C: Signs of illness in pigs .....	10

**If you notice any signs of illness in your pigs that resemble CSF, or unexplained illness or death, contact your herd veterinarian immediately.**

## Classical Swine Fever

### Hog Cholera

#### What is classical swine fever and what causes it?

Classical swine fever (CSF), also known as hog cholera, is a highly contagious and economically significant viral disease of pigs. The disease was eradicated from the U.S. in 1978, but it still poses a threat due to outbreaks in Asia, South America, Central America, including Mexico and parts of the Caribbean islands and Africa.

#### What animals get classical swine fever?

CSF affects domestic and wild (feral) swine.

#### How can my animal get classical swine fever?

Pigs can become infected after eating (**oral**) food contaminated with the virus. This most commonly occurs from the feeding of uncooked or undercooked garbage or meat products to pigs. Pigs are then exposed by **direct contact** with infected pigs or by objects (**fomites**) contaminated by infected pigs (e.g., equipment, boots, clothing, buckets, pens). The virus is shed in the blood, saliva, nasal discharge, urine, feces or tissues of infected pigs. The virus can also be spread in semen during breeding or across the placenta from infected sows to piglets. Less commonly the virus is spread by **aerosol** in close confinement or by **vectors** (e.g., flies).

#### How does CSF affect my animal?

Severity of the disease varies with the strain of virus introduced. Disease can range from mild to severe. Acute infections occur rapidly (2-15 days) and result in variable rates of

illness and death. Chronic infections occur over a longer period of time (2-4 weeks) and may only affect a few animals. Some infected pigs may not show signs of disease but serve to spread the virus to others.

Infected pigs may have a high fever (105-107°F), huddle and stop eating. Intermittent constipation followed by diarrhea and conjunctivitis (reddened eyes) can also occur. Hemorrhages of the skin may be seen as raised, reddened spots on the skin or purple discoloration of the ears, abdomen or inner thighs. Young pigs may have incoordination, weakness and convulsions.

In breeding herds, the disease can affect reproductive performance. Infected sows may abort, have stillborn, mummified, malformed or weak piglets

#### Can I get CSF?

CSF does not affect humans.



#### Who should I contact, if I suspect CSF?

Contact your veterinarian immediately. Classical swine fever is not currently found in the U.S.; suspicion of disease requires immediate attention.

#### How can I protect my animals from CSF?

To prevent the introduction of CSF, use strict biosecurity procedures on your farm. Minimize visitors on your farm and do not allow persons who have recently (last 5 days) had contact with animals, especially swine, in other countries to have contact with your pigs.

Clean coveralls and boots should be worn when contact with pigs is expected. These items should remain on the farm and be cleaned and disinfected prior to re-use.

Vehicles and wheel wells should be cleaned and disinfected **before** entering and leaving the farm.

Newly arriving pigs should be isolated for at least 30 days before being introduced to the rest of the herd.

Do not feed uncooked or undercooked garbage or meat products to pigs. Implement fly control measures.

#### For More Information

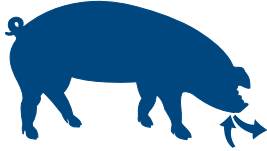
CFSPH Technical Fact Sheets. Classical swine fever at [www.cfsph.iastate.edu/DiseaseInfo/](http://www.cfsph.iastate.edu/DiseaseInfo/)

USDA-APHIS. Classical swine fever fact sheet at [www.aphis.usda.gov/lpa/pubs/fsheet\\_fa\\_notice/fs\\_ahscsf.pdf](http://www.aphis.usda.gov/lpa/pubs/fsheet_fa_notice/fs_ahscsf.pdf)

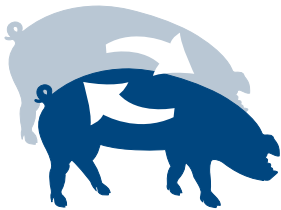
# Classical Swine Fever

## DISEASE TRANSMISSION ROUTES

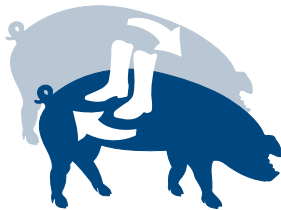
Classical Swine Fever (CSF) is a highly contagious disease of swine. The various routes of transmission for the virus are listed below. CSF is not zoonotic - it does not affect humans.



**Oral** — Pigs may ingest the CSF virus in contaminated feed (such as uncooked garbage or meat products) or by licking or chewing on contaminated environmental objects.



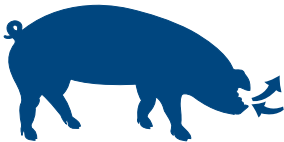
**Direct Contact** — Pigs can be exposed by contact with infected pigs. The virus can enter through open wounds or mucous membranes (e.g., eyes, nose, mouth) following nose-to-nose contact, rubbing or biting.



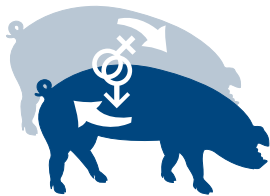
**Environmental Contamination** — The virus is shed in nasal secretions, blood, saliva, urine, feces or can be found in the tissues of infected pigs.

**Fomites** — Objects contaminated by infected pigs can transfer the virus from one susceptible animal to another.

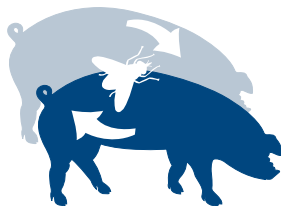
**Traffic** — Vehicles, trailers or humans (by clothing, boots, or hands) can transfer the virus to another location.



**Aerosol** — The virus can be carried short distances in droplets passed through the air from one animal to another.

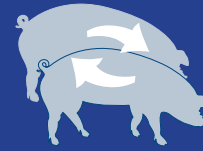


**Reproductive** — The CSF virus can be transmitted through semen during mating or to the fetus during pregnancy.



**Vector-borne** — Insects, such as flies, may carry the virus from one animal to another.

# PREVENTION PRACTICES FOR CLASSICAL SWINE FEVER (CSF)



Classical Swine Fever (CSF), also known as hog cholera, is a highly contagious viral disease of pigs. Eradicated from the United States in 1978, the disease is common in other parts of the world and therefore poses a risk to U.S. swine herds.

If CSF is confirmed anywhere in the U.S., it could spread rapidly across the nation. Pigs and herds confirmed to have CSF may need to be euthanized to control the further spread of the disease.

This document describes biosecurity practices you can take to prevent CSF from entering your farm. These measures should be immediately put into place on your farm if CSF is confirmed anywhere in the U.S. and continued until the U.S. is once again declared CSF free.

## Transmission of the Disease

Understanding how CSF is spread to and between pigs can help highlight the importance of biosecurity measures needed on your farm and help you recognize areas that may need additional work to prevent disease introduction and spread.

CSF is primarily spread **orally** by ingestion of contaminated garbage (swill) or meat products. Once swine become infected, the virus is rapidly spread to other pigs through **direct contact**. The virus can be found in all body fluids of infected pigs, including nasal secretions, blood, urine, feces, saliva and even semen.

The virus can also survive in the environment, contaminating equipment, pens, buckets, even footwear and clothing of people in contact with infected pigs. These items (termed "**fomites**") can serve as an additional source of virus for susceptible pigs. If infected pigs are transported in vehicles or trailers, these items can also become contaminated and serve as a source of the virus on the farm or to other farms, if not properly cleaned and disinfected. The virus can also be spread reproductively. This can occur via semen (boar to sow) or during pregnancy (sow to piglet).

Other less common routes of transmission include aerosol spread in closed areas or mechanical transfer of the virus by insect vectors (e.g., flies). These areas should also be considered when implementing biosecurity measures to prevent the introduction of CSF onto your farm.

## General Precautionary Measures

Prevention measures to minimize the introduction and spread of CSF on your farm fall into three general categories.

1. Use strict biosecurity measures for animals, animal products, vehicles, people and equipment.
2. Restrict or stop all animal movement to prevent entry or spread of the disease.
3. Detect and report any disease or unusual signs to your herd veterinarian as quickly as possible.

Specific steps to take if CSF is confirmed in the U.S. are listed below. Many should already be in place on your farm but should be enhanced and more strictly enforced if CSF is found in the U.S. These measures can help minimize the chance of CSF being introduced on your farm.

## Farm Entrance

### • Limit access to your farm.

The entrance to your farm is a major control point. Gates at farm entries should be locked when not in use. By having only one gated entrance to the farm, you can better control and monitor all visitors and vehicles arriving at your farm.

### • Restrict or limit visitors on your farm.

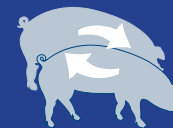
At all times, limit the number of visitors to the farm. Visitors who have traveled internationally within the past five days, should not be allowed to enter the farm. Post warning signs indicating entry onto the farm is not allowed without permission.

### • Essential visitors should follow farm biosecurity procedures.

Some visitors are essential for the continued operation of the farm. Establish strict biosecurity procedures for these individuals, then inform them of the measures to follow while on your farm.

- Honk before getting out of their vehicle (to announce their arrival).
- Check-in with farm personnel upon arrival (direct visitors to "where" they should check in).
- Be accompanied by someone from the farm at all times (to ensure biosecurity measures are being followed).
- Wear clean farm-specific protective clothing (e.g., coveralls, boots) while on the farm. (Be sure to guide visitors to where protective clothing is located).
- Avoid contact with animals or animal areas unless absolutely necessary (this includes vehicles and visitors).

# PREVENTION PRACTICES FOR CLASSICAL SWINE FEVER (continued)



- **Post signs at the farm entrance (Appendix A).**  
Signs inform unauthorized visitors to not enter your farm. When entry is necessary, signs give specific rules and biosecurity measures to follow while on your farm.
- **Monitor and record all traffic on or off your farm.**  
Maintain a log sheet (See Appendix B) of all visitors and vehicles that enter your farm. Accurate record keeping of traffic on your farm will help with disease surveillance and tracking if necessary. You should not rely on your ability to “recall” visitors and vehicles that were on your farm.

## People

- **Limit employees to only those necessary for the continued operation of the farm.**
- **Employees that have contact with swine at other locations (including their own home) should use very strict biosecurity measures while on your farm.**
- **Implement strict biosecurity measures for employees coming onto the farm.**
  - Clean boots, hats and coveralls must be worn while on the farm. These should be provided by your farm.
  - Protective clothing should remain on your farm and be washed and/or disinfected before being worn again.
  - Disinfect footwear before entering AND after leaving any animal housing area.
  - Boot baths should be provided at the entrance/exit of all animal areas. The disinfectant solution should be changed at least daily or when visibly soiled.
  - Hands must be washed with soap and warm water before entering AND after leaving animal areas even when gloves are used.
  - Minimize contact with animals to only tasks necessary for the continued operation of the farm and health and well-being of the animals.
- **Educate your employees on their role in preventing disease introduction and spread. They should:**
  - Understand how the disease can be spread
  - Understand the farm’s biosecurity procedures and how to prevent the spread of the disease
  - Know the signs of illness in pigs with CSF
  - Know who to contact if signs of disease are seen

- **Strict biosecurity measures must also be implemented by any visitors to the farm.**
  - Clean coveralls, hats and disposable or disinfected rubber boots should be worn while on-farm. These items should remain on-farm when the visitor leaves.
  - Vehicles and footwear should be cleaned and disinfected. Facilities and equipment (pressure washers, brushes, hoses) for disinfecting should be provided on the farm.

## Vehicles

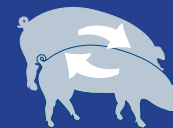
- **Minimize traffic onto your farm to only vehicles essential for continued operation.**
  - Off-farm vehicles should not be allowed to drive onto your farm unless necessary. If necessary, areas where vehicle traffic is allowed should be restricted.
  - Vehicles should be parked at the farm entrance, away from animal areas, or in designated parking areas. These areas should preferably be concrete or paved areas.
  - Have deliveries left at the farm entrance.
- **Clean and disinfect vehicles prior to entry and upon leaving.**
  - All vehicles entering the farm must spray their wheels, wheel wells and under-carriage with disinfectant.
  - Facilities for washing and disinfecting vehicles should be provided on-farm.
- **Do not share equipment or vehicles between farms or sites.**

## Animal Movement

- If CSF is confirmed in the U.S., movement restrictions may be implemented locally, regionally and possibly nationally. Restrictions will depend on the scope of the outbreak.
- **Know the health status and the source of any animal(s) brought onto your farm.**
  - **If animal movement is allowed in your area, thoroughly clean and disinfect the vehicle and trailer before loading and after unloading.**
    - Pay special attention to the tires and wheel wells.
    - Avoid mixing pigs from different sources when transporting.
  - **Maintain thorough and accurate records of animal movement.**
    - Document all animal movements, including the dates of introduction into the herd, where they came from and movements between separate units.
    - Each farm location must be treated as a separate unit or premise. This information will be essential to help trace where the disease came from.



# PREVENTION PRACTICES FOR CLASSICAL SWINE FEVER (continued)



## Animals

- **Do not feed uncooked or undercooked garbage (swill) or meat products to swine.**
- **Do not allow your animals to have contact with wildlife.**

Feral swine are also susceptible to CSF and, if infected, could potentially spread the virus to domestic swine.
- **Monitor animals closely and frequently for any developing illness or signs of disease.**
- **Educate yourself and train your employees about CSF and the signs of illness (see Appendix C).**
  - Disease signs may vary from mild to severe
  - High fever (41°C/105°F)
  - Dullness or weakness
  - Purple discoloration of the skin
  - Conjunctivitis
  - Abortions and/or congenital deformities (piglets)
  - Death; Mortality rates may be low
- **Isolate any sick animals from the herd and contact your herd veterinarian immediately to examine sick animals.**
- **Use separate facilities, equipment and staff to handle isolated livestock.**
  - If this is not possible, at a minimum, handle or visit the isolated animals LAST.
  - Clean and disinfect all equipment, clothing, boots, etc. that come into contact with isolated animals.
- **Quarantine any newly purchased or newly arriving animals for at least 30 days.**

New or returning animals (e.g. shows, competitions) can be infected with a disease without showing any signs of illness right away. Quarantining the animal(s) before introducing them with the rest of the herd, allows time for any signs of disease to develop in the animal, without exposing your entire herd to the disease agent. Animals exposed to the CSF virus may take as long as 14 days before signs of illness are seen. Quarantined animals should not share water, feed, facilities or bedding with your other animals. Ideally, animals should be quarantined at a separate location (premises).

## Cleaning and Disinfection

The virus that causes CSF is sensitive to drying and sunlight. It can also be inactivated at pH of 3 or less or pH greater than 10. Effective disinfectants include sodium hypochlorite (household bleach) and phenolic compounds. Some quaternary ammonium compounds ("quats") may also be effective. In addition to selecting an effective disinfectant, proper cleaning

and disinfecting procedures are essential in order to adequately and effectively control the spread of the virus.

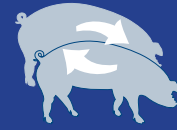
## Proper Cleaning Procedures

1. **Wear personal protective equipment**—gloves, coveralls, rubber boots (or disposable boots) and possibly a mask if you are cleaning an area that will generate dust.
2. **Dry clean**—remove all visible material by brushing, scraping and/or sweeping. This is the most important step as organic matter inhibits many disinfectants. Disposal of waste material should be handled in such a way as to prevent contamination of other areas such as feed, water or other animals.
3. **Soak**—soak the area with hot water and a detergent or cleaning agent. Be sure to wash and soap down all equipment in the area- waterers, feed troughs, pails, etc.
4. **Wash**—wipe, spray or scrub the area, starting with the dirtiest or highest area (ceiling), after it has soaked for a period of time. This step can be enhanced by the use of pressure washers when cleaning wood, cement, or other porous surfaces. Use caution when using high pressure washers (200-1000 psi) as they can aerosolize disease organisms and spread them to other areas or expose the person cleaning.
5. **Rinse**—remove all detergent residue by applying a low pressure water rinse on all surfaces, starting with the highest area and working your way to the floor. This is especially important as certain disinfectants are inactivated by detergents and soaps.
6. **Dry**—it is important to allow the area to dry completely before applying a disinfectant so that it can work effectively.

## Proper Disinfecting Procedures

1. **Read the product label**—this is important to make sure the solution is handled correctly. Personal protective equipment (gloves, mask) should be used when mixing up solutions. Other considerations to review before applying solutions to fomites include specific dilutions, water temperature, environmental temperature, the need for ventilation and the disease organisms killed by the disinfectant.
2. **Disinfect**—apply the product at the correct dilution and let it "sit and work" for the suggested amount of time. Contact time of the disinfectant is important for the product to inactivate or kill the microorganism present.
3. **Final rinse**—remove all disinfectant by applying a low pressure water rinse on all surfaces, starting with the highest area and working your way to the floor.
4. **Dry**—it is important to allow the area to completely dry before allowing animals to have contact with the area or item that was just cleaned and disinfected.

# PREVENTION PRACTICES FOR CLASSICAL SWINE FEVER (continued)



## Proper Boot Baths Procedures

1. Mix solution to the proper concentration according to the label instructions.
2. Clean all dirt, manure and debris off of boots BEFORE stepping into the disinfectant solution. The presence of organic material (dirt, manure, etc.) will prevent most disinfectants from working.
3. Allow the disinfectant solution to have ample contact time with the boot surface. This will vary with the disinfectant selected. Consult the product label.
4. Change solutions at least daily or when visibly dirty.

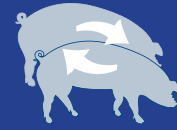
## Proper Storage

If the equipment or area will not be used immediately, it is important to avoid contamination between uses. Small items can be placed into plastic bags and sealed; larger items can be placed into closed cabinets. Equipment and housing areas are more difficult to protect for long periods of time and may need to be rinsed again before contact with animals.

## Barns and Buildings

- **Clean and disinfect anything that has had contact with animals, manure or animal secretions.**
  - This includes barns and buildings, vehicles, trailers, equipment, and supplies.
  - Tires and wheel wells of vehicles and trailers are especially important.
  - Surfaces should be scraped, cleaned with high pressure hot water and detergent, and rinsed.
  - The disinfectant should then be applied and allowed to “sit” for the optimal contact time.

# PREVENTION PRACTICES FOR CLASSICAL SWINE FEVER - APPENDIX A



Sample signs to post at the farm entrance in the event of a CSF outbreak in the U.S.  
(Available from the CFSPH web site at [www.cfsph.iastate.edu](http://www.cfsph.iastate.edu))

Signage is also available from private companies such as Gempler's.





# PREVENTION PRACTICES FOR CLASSICAL SWINE FEVER - APPENDIX C

## IMAGES OF CSF: Signs of Illness in Swine

Source: Dr. R. Thanawongnuwech, Veterinary Pathology- Chulalongkorn University



Purple skin discoloration - body

Source: Dr. R. Thanawongnuwech, Veterinary Pathology- Chulalongkorn University



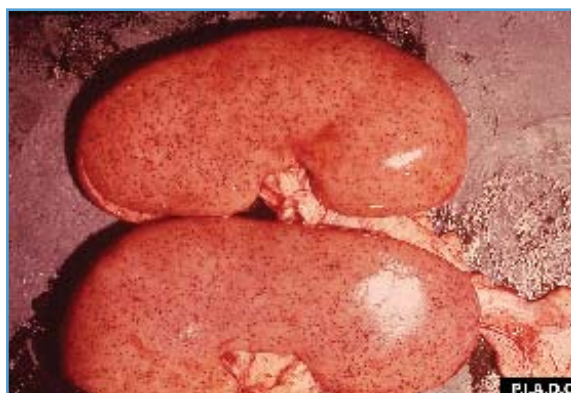
Purple skin discoloration - ears

Source: Dr. R. Thanawongnuwech, Veterinary Pathology- Chulalongkorn University



Sick pigs huddling

Source: Plum Island Animal Disease Center



Hemorrhages on the kidney

Source: Plum Island Animal Disease Center



Hemorrhages in the lung