

VERSION 6.0

EDUCATION HANDBOOK

A quality assurance program for America's Pork Producers.



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PORK QUALITY ASSURANCE[®] PLUS (PQA PLUS[®]): BUILDING A STRONGER INDUSTRY

Building a stronger industry takes everyone to demonstrate that they are doing what's right for people, pigs and planet, by implementing the We Care[®] ethical principles and the PQA Plus Good Production Practices (GPPs).

WE CARE[®]: MAKING OUR INDUSTRY STRONGER

Regardless of the business, trust and transparency are essential to maintaining the trust of channel partners (retail and foodservice) as well as consumers. This has never been more challenging or necessary for the pork industry, as the public and today's consumers want to know how their food is produced. The pork industry works continually to build trust and add value for our channel partners and consumers through producer-led programs to demonstrate how pork is produced.

The We Care[®] initiative, created by America's pig farmers over a decade ago, addresses consumer concerns and shares how the industry is responsible and aware of what pigs need. The We Care[®] initiative encourages continuous improvement in the pork industry's production practices and promotes the strong record of responsible farming that producers have achieved over the years.

At the heart of the We Care[®] program are six ethical principles. They ask every producer to make the following commitments:

FOOD SAFETY

We affirm our obligation to produce safe food.

ANIMAL WELL-BEING

We affirm our obligation to protect and promote animal well-being.

PUBLIC HEALTH

We affirm our obligation to ensure our practices protect public health.

OUR PEOPLE

We affirm our obligation to provide a work environment that is safe, where employees are treated fairly and with respect.

ENVIRONMENT

We affirm our obligation to safeguard natural resources in all our practices.

COMMUNITY

We affirm our obligation to contribute to a better quality of life in our communities.

THE PQA PLUS PROGRAM

Pork producers and others throughout the pork supply chain have consistently demonstrated an industry-wide commitment to improvement. That commitment has helped generations of consumers develop and maintain confidence that buying pork was a safe, healthy and ethical choice. PQA Plus continues to drive this confidence by delivering improved production practices based on the latest scientific research to producers and caretakers. It also provides them with the tools and information they need to drive continuous improvement at the farm level.

PQA PLUS HAS TWO DISTINCT COMPONENTS

1. Certification

Individual producer PQA Plus certification, which is earned through participation in and mastery of the education program administered by a certified PQA Plus Advisor through face-to-face or online trainings.

2. Assessment

PQA Plus site status, which is earned after an on-farm site assessment and producer completion of the PQA Plus certification.

PQA Plus trainings are driven by the We Care® ethical principles and incorporate GPPs as they align with each principle.

GPPs are defined as practices essential to demonstrating the We Care® ethical principles. When implemented, GPPs will help ensure pork is free from chemical and physical hazards; that the pigs are raised in a caring, humane manner; that our natural resources are protected by pork producers; and that caretakers have a safe place to work. These practices are based on:


- Hazard Analysis and Critical Control Point (HACCP) principles. HACCP principles are the standard for controlling potential hazards in foods produced and processed in the United States and many foreign countries.^{39,49}
- The U.S. Food and Drug Administration's Compliance Policy Guide (CPG) 7125.37 – "Proper Drug Use and Residue Avoidance by Non-veterinarians"⁵²
- The Animal Medicinal Drug Use Clarification Act (AMDUCA) of 1994.⁴⁸
- Science-based animal care and well-being guidelines.
- Good Environmental Livestock Production Practices (GELPPs) set by the American National Standards Institute (ANSI)
- Occupational Safety and Health standards including Agriculture (29 CFR 1928), General Industry (29 CFR 1910), and the General Duty Clause
- A valid pre-harvest traceability system that is in compliance with federal and state laws

PQA PLUS HANDBOOK

This handbook is a comprehensive resource detailing good production and management practices and guidelines of the Pork Quality Assurance Plus program. This is an educational handbook for all parties involved in the production of pigs. The PQA Plus certification training is geared towards the caretaker and handler, so this handbook should be used to further explore the high-level topics covered in it.

Although everyone involved in raising pigs is responsible for being knowledgeable on and implementing each GPP, there are instances throughout the handbook where specific roles are defined. These roles include:

- **Pork producer and producer** – refers to everyone involved in raising pigs on the farm, including the overall operation management and animal caretakers.
- **Management** – refers to the owner or decision maker for the facility/site or the overall farm.
- **Caretaker and handler** – refers to individuals responsible for the day-to-day care and handling of the pigs.
- **Transporter** – refers to individuals responsible for the movement and transport of pigs.

 At the beginning of each chapter is a list of Good Production Practices and a list of records pertaining to the chapter. The GPPs are also found in each chapter, identified by a specific color, and identified as the symbol above. If templates of the records listed for each chapter are available, they are located in the resources and forms section of the handbook and available through the National Pork Board at [lms.pork.org](https://www.npb.org).



FOOD SAFETY

United States pork producers promise to PRODUCE SAFE FOOD.





FOOD SAFETY

United States pork producers promise to PRODUCE SAFE FOOD.

FOOD SAFETY RECORDKEEPING

Veterinarian-Client-Patient Relationship

Confirmation of No Medications Administered

Individual Treatment Record

Pen/Individual Treatment Record

Farm Medication Plan

Vaccination Management for Breeding
and Non-Breeding

Medicated Feed Mixing

Biosecurity Checklist

Visitor Log

Needle Inventory

Drug Storage Record Inventory Sheet

GPP

FOOD SAFETY GOOD PRODUCTION PRACTICES

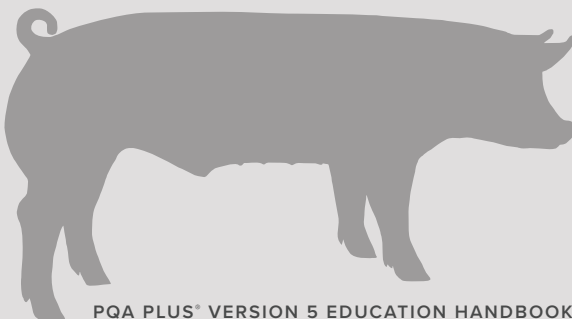
Establish and maintain a herd health management plan

Correctly store and administer animal health products

Maintain medication records including withdrawal times

Follow proper feed processing and feed biosecurity protocols

Use a VCPR as the basis for medication decision-making



Providing safe, wholesome pork is the producer’s most important responsibility. Ensuring pork safety is a complex undertaking that requires awareness of the role that everyone plays in the food chain. On the farm, many factors can affect the safety of pork, which is why today’s pork producers employ a wide variety of technology and techniques to minimize pork safety threats. These modern practices have vastly improved today’s pork in terms of safety and quality.

This chapter will take a close look at the following topics:

1. Healthy Animals
2. Storing and Administering Animal Health Products
3. Medication Storage
4. Injections
5. Feed Safety and Processing

HEALTHY ANIMALS

Safe and wholesome pork begins with a healthy swine herd. Producers can take intentional, proactive steps to support the overall health of the swine herd and ensure caretakers are prepared to help address events that could place swine health at risk.

HERD HEALTH MANAGEMENT PLAN

Establish and maintain a herd health management plan.

A healthy swine herd starts with a herd health plan formulated by the producer and a veterinarian. This plan is a series of living documents that outlines procedures between the veterinarian and the producer that are incorporated into the farm’s standard operating procedures. The plan is designed to identify and address herd health challenges and to help prevent diseases from entering the herd. A herd health management plan should identify and develop tools such as having a veterinarian-client-patient relationship (VCPR), the use of antibiotics, reading medication labels, biosecurity protocols and emergency preparedness planning.

BIOSECURITY

Biosecurity is a combination of management practices designed to prevent the introduction and transmission of diseases and disease-causing agents into a herd.

Prevention of the entry of diseases into a herd is a key component of a herd health management plan. Procedures that are typically associated with a biosecurity plan include barn and transportation sanitation, rodent control, worker and visitor entry policies and other general farm security protocols. If a disease is already present in one or more segments of the herd, biosecurity can help prevent that disease from spreading to other segments. However, all biosecurity protocols should be focused on the prevention of the entry of diseases. The primary goal of biosecurity protocols is prevention of disease entry.

DISEASE TRANSMISSION

Knowing how pig diseases can come into a herd and how they are spread can assist in the development of a biosecurity plan for the herd. Pigs are susceptible to many different diseases. Diseases are caused by pathogens, which can be bacterial, viral or parasitic. Common diseases of pigs can spread or be transmitted in multiple ways. When pigs are brought to another farm or area and are commingled with pigs with a different health status, the risk of transmitting disease can be high. Therefore, a biosecurity plan should take into account how diseases are transmitted and try to minimize exposure as much as possible.



DIRECT TRANSMISSION	INDIRECT TRANSMISSION
<p>The transfer of disease from one pig to another can occur through pig exposure to:</p> <ul style="list-style-type: none"> • Another pig (i.e. nose-to-nose contact) • Droplets in the air from sneezing or coughing pigs • Contaminated manure or fecal material • Infected semen • Biting insect 	<p>The spread of disease by exposure to contaminated objects. This can occur through pig exposure to:</p> <ul style="list-style-type: none"> • Rodents or wildlife • Birds • Equipment including scale, sort board, snare, etc. • Clothing & footwear • Transportation vehicles & equipment

Diseases can be transmitted in two different ways. By knowing how diseases can be transmitted, a biosecurity plan can be developed to prevent entry and spread of such diseases. Several key areas of focus should be considered in a biosecurity plan:

- Entry of individuals to the farm
- Temporary isolation of any new or returning animals to the farm
- Sanitation of the facilities
- Transportation equipment biosecurity for animals and feed
- Control of wildlife, rodents and other pests
- Supplies, feed and other inputs coming onto the farm

The implementation of a farm-specific biosecurity plan can play a key role in disease prevention. A practical application of a plan is highlighted by the steps taken to prevent *Trichinella* infection on-farm.^{17, 38}

TRICHINELLA INFECTION AND PREVENTION

The prevention of human trichinellosis is a worldwide public health goal. There are many on-farm guidelines known to prevent pigs from becoming infected with *Trichinella*. Following these on-farm guidelines to prevent pigs becoming infected with *Trichinella* will ensure safe, wholesome pork.

TRICHINELLA INFECTION PREVENTION

Trichinosis is a parasitic disease caused by eating raw or undercooked meat infected with the larvae of a species of round worm called *Trichinella*. It is important to prevent trichinosis because of trade barriers imposed by countries importing pork products.

PREVENTING EXPOSURE TO TRICHINELLA

The following five guidelines outline the best management practices to minimize the risk of exposure of swine to the zoonotic parasite *Trichinella*. These guidelines enable pork producers to keep pigs in an environment where infection with this parasite is not likely to occur.

Implement the following guidelines to reduce the risk of *Trichinella* infection:

- Follow proper feed biosecurity protocols.

- Prevent exposure to rodents, wildlife and birds.
- Refrain from feeding raw food waste of animal origin to swine.
- Promptly remove and properly dispose of swine carcasses.
- Follow state and federal regulations regarding feeding garbage that includes food waste of animal origin.

FOLLOW PROPER FEED BIOSECURITY PROTOCOLS

All feed ingredients and complete feed should be stored in proper bins or containers that are rodent proof and have a lid that forms a proper seal. Properly storing feed ingredients will reduce the possible exposure to or contamination by rodents, wildlife or birds. Feed and feed ingredient spills should be cleaned up immediately. More information regarding proper feed processing protocols will be covered later in this chapter.

PREVENT EXPOSURE TO RODENTS, WILDLIFE AND BIRDS

It is important to control rodents, wildlife and bird populations in and around pig production and feed manufacturing facilities. Effective control programs should include a comprehensive written plan to:

- Deny rodents and wildlife entrance to facilities and buildings.
- Remove sources of food that can attract and maintain rodent populations.
- Prevent or deny cover and places to live.
- Bait or trap to reduce rodent populations.

REFRAIN FROM FEEDING RAW FOOD WASTE OF ANIMAL ORIGIN TO SWINE

Feeding pigs raw meat waste poses a risk for *Trichinella* infection. To eliminate this risk, raw food waste from animal origin should not be present on site and should not be fed to pigs. If food waste must be fed, and is legal in your state, be sure to comply with all cooking requirements per state and federal regulations.

DOCUMENT ARRIVAL AND DEPARTURE OF PIGS FROM THE FARM

Pigs should originate from herds officially recognized



as being under controlled management conditions or herds under PQA Plus managed sites.

PROMPTLY REMOVE AND PROPERLY DISPOSE OF SWINE CARCASSES

Procedures should be in place to promptly remove and properly dispose of dead swine found in pens upon identification. For more information regarding mortality disposal, refer to the mortality section of the environment chapter.



ENTRY OF INDIVIDUALS ON THE FARM

People can transfer pathogens on their body, clothing and footwear to the pigs. Vehicles and

equipment can also carry unwanted pathogens that could infect pigs. In order to protect the health of the herd, limit visitors and vehicle traffic.

- Develop and visibly post biosecurity standard operating procedures for all people entering the farm which can include steps to:
 - » Require all visitors park away from the facility.
 - » All non-farm workers and visitors sign in before entry to the farm.
 - » Require downtime away from pigs or pig facilities (including slaughter plants, livestock markets, exhibitions) prior to entry.
 - » Create barrier to disease entry including showering in/out, washing hands, changing to dedicated farm clothing, coveralls and footwear, and/or wearing disposable coveralls and footwear.
 - » Follow biosecurity protocols for bringing any personal items onto the farm.
 - » Avoid taking food into animal areas.
- Limit visitors to only those who have a reason to be there and only allow visitors when the producer is present.

ISOLATION OF NEW OR RETURNING ANIMALS TO THE FARM

Pig-to-pig contact is a primary way diseases can

spread. In order to prevent the spread of disease, temporary isolation of all incoming animals is a sound biosecurity practice to follow. Isolation means keeping a new pig or a returning pig separate from animals already on the farm for a set amount of time. Isolation provides a period of time for the pig to be watched for signs of disease before going into the herd.

- When possible, establish an isolation facility for quarantining new stock at a site that is remote or isolated from the existing herd.
- House new or returning pigs in a separate facility.
- Care for pigs in isolation last in the day.
- Wear separate clothing, coveralls and boots or footwear for isolation chores OR wash clothing and boots after finishing chores and allow them to dry before use the next day.
- During the isolation period, observe and test for diseases, vaccinate, medicate and acclimate the new animals as recommended by a herd veterinarian.
- Document animal arrivals and departures from the farm.

SANITATION OF FACILITIES AND EQUIPMENT

Proper sanitation of the facility and equipment means keeping it free of dirt and debris as much as possible. Organisms that cause disease in pigs (bacteria, viruses and parasites) can survive in different types of materials. Cleaning, disinfection and drying of facilities is a critical part of sanitation and a key component of a biosecurity plan that can keep the level of disease-causing pathogens to a minimum. Suggested practices for proper cleaning, disinfection and drying are listed below:

CLEANING:

- Properly cover all electrical boxes and moisture-sensitive equipment prior to cleaning a room, barn or trailer to avoid human injury or water damage to equipment.
- Remove all bedding, dirt and manure.

Wash equipment and the facility with hot water, when possible. Detergents, similar to those used for dishwashing, may make cleaning much easier.





DISINFECTION:

- Use disinfectants only after cleaning. Disinfection is effective when performed after all organic material has first been removed.
- Apply disinfectants according to the label directions. Directions may include the length of time a disinfectant must remain on a surface and the rinsing procedure.

DRYING:

- Allow the equipment, rooms and barns to fully dry to kill pathogens.
- Dry by direct sunlight, time or an additional heat source.

TRANSPORTATION EQUIPMENT BIOSECURITY FOR ANIMALS AND FEED

Transporters of pigs, feed and other supplies and equipment to the farm need to be aware of the role that transportation can play in disease prevention. Organic matter like shavings and manure, water, mud and snow can carry diseases on tires, undercarriages, and trailers. This can be transferred on the driver's clothing when entering into the barn, and may infect healthy pigs. Therefore, biosecurity practices should be taken to keep live-animal vehicles, feed trucks and any other support equipment clean and free of potential pathogens.

- Develop and maintain a line of separation dividing the high health areas of the farm from areas of

unknown status outside the farm. Prohibit livestock truck drivers from entering the animal areas.

- Have dedicated, separate footwear for use outside of the farm (e.g. when checking bins). Change back into farm-specific footwear when re-entering the farm.
- Change clothes and footwear after visiting other farms, livestock markets or exhibitions before going back to the farm.
- If at all possible, allow only cleaned and disinfected trucks on the farm.
- Design the load-out facility to prevent pigs from reentering the barns after they have been on the chute, on the truck or exposed to other animals or manure.
- Develop and maintain wash and disinfection procedures to clean all transportation equipment.
- Avoid the use of waste water for cleaning.
- Limit the sharing of equipment or tools with other pig facilities.
- Prohibit rendering trucks from areas near pigs or buildings.
- Locate feed storage bins so delivery trucks do not cross through lots or animal traffic-flow patterns.
- Use foot covers for live haul and feed delivery drivers to keep tractors clean and avoid contamination of equipment.



CONTROL OF WILDLIFE, RODENTS AND OTHER PESTS



Wildlife, birds, rodents, feral swine and other pests can readily transmit many pathogens and compromise biosecurity. Limiting exposure to these animals will protect pig health.

- Keep the area around the barn free of weeds, debris or feed making the area less desirable for unwanted pests.
 - » This area is known as a sterile zone and is immediately adjacent to and surrounding the facility, serving as a buffer and detection zone for rodent and wildlife activity. The sterile zone should be devoid of anything that could harbor rodents, wildlife or birds. The sterile zone can contain decorative vegetation that is well maintained, but with increased rodent control practices applied as outlined below.
- Use fencing, bird netting or other materials to keep pests out of the barn or away from the building.
- If mortality occurs, manage mortalities in a timely manner. Focus on biosecurity practices to remove mortalities on-farm:
 - » Compost mortalities when allowed rather than having a rendering truck come to the farm.
 - » If a rendering service is employed, prohibit rendering trucks from areas near pigs or buildings.
 - » Promptly move carcasses to a pick-up area that is protected from scavengers.
- Prevent damage to facilities and equipment by denying entrance to facilities and buildings, removing sources of food that can attract and maintain rodent populations, preventing or denying rodents cover and places to live and baiting or trapping to reduce rodent populations.
- In addition to limiting exposure using the methods above, some additional practices can be implemented for rodent control:
 - » Work with a rodent control specialist to develop a plan tailored to the farm.

- » Store feed in rodent-proof bins and feeders covered with tight-fitting lids.
 - » Utilize enclosed feed transfer lines.
 - » Clean up feed spills and repair leaky feed lines promptly.
 - » Plug holes and gaps in the walls and doors of buildings.
 - » Place bait stations strategically throughout the facility.
 - » Maintain a three-foot sterile zone around the exterior of buildings.
 - » Prevent refuge within 100 feet of the pig buildings.
- **For additional guidance on approved products for agricultural use, see www.epa.gov.**

Cats and dogs are an unacceptable way of controlling rodents in and around livestock buildings. Cats can be the source of disease agents that infect pigs and other livestock. Some of these disease agents may present food safety hazards in pork.

THE FOLLOWING RESOURCES CAN PROVIDE ADDITIONAL INFORMATION ABOUT BIOSECURITY:

- University of Nebraska, Lincoln. Biosecurity of Pigs and Farm Security. Accessible at extensionpublications.unl.edu/assets/pdf/ec289.pdf.³⁵
- Biosecurity Guidelines that can be found on porkcheckoff.org by searching for the keywords “biosecurity guidelines.”
- For additional information on disinfectants, see cfsph.iastate.edu/Disinfection/index.php.⁹

FOREIGN ANIMAL DISEASE AND AGROTERRORISM AWARENESS, REPORTING AND PREVENTION

The introduction of a trade limiting foreign animal disease (FAD) will cause severe economic damage to the industry and negative impacts on the health and welfare of pigs (<https://www.card.iastate.edu/products/publications/synopsis/?p=1372>). Increasing biosecurity and security combined with awareness and preparedness for FADs is beneficial to the industry in two primary ways:

- Provides the best opportunity to prevent, detect, contain and eradicate FADs.



- Benefits the industry by maintaining and opening new international trade opportunities.

PROCESS FOR FAD AWARENESS, REPORTING AND PREVENTION

- Develop an FAD education awareness plan for caretakers to help recognize and report clinical signs that are consistent with diseases like Foot and Mouth Disease, Classical Swine Fever, and African Swine Fever.
- With a veterinarian, develop a plan for reporting suspected FADs to state animal health authorities which should include:
 - » Internal reporting pathway and call tree for caretakers.
 - » External reporting pathway and call tree to state animal health officials.
 - » Temporary disease control and biosecurity protocols until guidance is received from state animal health officials.
- With a veterinarian, develop a biosecurity plan for caretakers traveling to international destinations and international visitors with policies and procedures that:
 - » Communicate expectations to caretakers regarding contact with livestock or areas where livestock are housed while traveling internationally.
 - » Communicate expectations to caretakers regarding downtimes after traveling internationally.
 - » Communicate expectations regarding caretaker declarations of agricultural products acquired while traveling internationally and exclusion of those products from the premises.
 - » Establish criteria for pre-vetting, exclusion, downtime and biosecurity for international visitors.
- Develop a security plan with policies and practices to:
 - » Thoroughly screen all job applicants and check references.
 - » Prevent unauthorized access to premises, livestock or areas where livestock are housed.
 - » Detect and report unauthorized access to the premises or livestock.

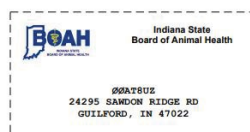
- » Inform and update local law enforcement about the farm's security plan.

More resources regarding FADs can be found at porkcheckoff.org.

PRE-HARVEST TRACEABILITY SYSTEM

Pre-harvest traceability is necessary for effective management of animals within a production system, the maintenance of commerce and trade, rapid response to disease outbreaks, and business continuity.

A pre-harvest traceability system is a standardized and reliable system of identifying animals and documenting their movements into and out of a production system and to harvest. Three components – premises identification, animal identification and accurate and timely record keeping – are essential to any pre-harvest traceability system a producer chooses to use.



PREMISES IDENTIFICATION

Producers should be able to associate all animals within the production system to the sites they were

on during production. The standardized Premises Identification Number (PIN), as used for PQA Plus site assessments, provides the ability to associate animals with an officially recognized site identifier in production and movement records.

- PIN consists of seven alphanumeric characters
- PIN can be obtained by registering production sites with the State Animal Health Official's office in the state where the site is located

ANIMAL IDENTIFICATION

Producers should be able to reliably identify all animals either individually or as part of a group or lot within the production system in accordance with 9 CFR 71.19 and 9 CFR 86.4.^{36,37} The Swine ID Plan's Program Standards found on page 92 provides examples of official methods of identifying groups or lots and individual animals that can be used to reliably identify animals within the producer's record keeping system.

When animals move within a pork production system, group or lot identification may be used unless the animals are commingled outside the production



system. The exception is when pigs are moved directly to slaughter where Federal law (9 CFR 71.19) dictates the type of identification that must be applied to each animal entering harvest channels. Animals that are moved but are not eligible for group designation must be identified by an official individual animal method or device specified by 9 CFR 71.19 for feeder, breeding, purebred or crossbred swine.³⁶ Removal or replacement of official identification devices can only occur in accordance with 9 CFR Part 86.4.³⁷

ANIMAL TRACING

Producers should be able to reliably trace all animals either individually or as part of a group or lot within the production system. Movement records should ideally be in electronic format and must be maintained for three years after the pigs leave the premises. AgView (AgView.com) is a free, opt-in technology solution from the National Pork Board that helps producers of all sizes and types maintain and securely provide pig traceability data to animal health officials when it is requested for disease traceback.

SECURE PORK SUPPLY³³



The Secure Pork Supply (SPS) Plan is a business continuity plan that will support the ability for pork producers to continue to move pigs in the event of a trade-limiting FAD of swine in the United States. Producers that voluntarily participate in the SPS Program will be able to demonstrate to animal health officials compliance with pre-harvest traceability, biosecurity and disease surveillance standards that will allow for the safe movement of pigs with no evidence of infection of the FAD in a disease control area.

Participation by producers in the SPS program will also enhance FAD preparedness by improving overall communication, coordination and response capabilities to an FAD event. Information regarding the Secure Pork Supply plan and participation can be found at securepork.org.

During a large-scale foreign animal disease (FAD) outbreak, federal and state resources will be in extremely high demand. When this occurs, pork

industry veterinarians, producers, caretakers, and industry partners (such as extension agents) become critical resources in the Certified Swine Sample Collector (CSSC) process on production site(s). This national swine sample collection training program will assure state and federal animal health officials that individuals have been trained by category II accredited veterinarians working in the pork industry to correctly collect, handle, and submit samples prior to an outbreak. (<https://www.securepork.org/>)

AgView, from the National Pork Board, is a no-fee, opt-in tool that allows pork producers to securely share herd health information and Secure Pork Supply documentation with animal health officials. This data can help officials to respond rapidly to a foreign animal disease outbreak to achieve better outcomes, including business continuity.

To register for an AgView account go to *manage.agview.com/create-account*.²⁸

STORING AND ADMINISTERING ANIMAL HEALTH PRODUCTS

A primary responsibility of all pork producers is to produce safe food. One component of food safety is freedom from violative drug residues. This involves knowing how the administration and storage of medications can impact withdrawal times for all animals treated. A plan to prevent marketing adulterated animals or animals with violative residues must be given to all caretakers. The plan must include instructions for properly following label directions, knowing the guidelines for proper storage of medications and vaccinations and adhering to appropriate administration guidelines for all medications. Caretakers are responsible for following label directions or directions provided by a veterinarian under a veterinarian-client-patient relationship (VCPR).

VETERINARIAN-CLIENT-PATIENT RELATIONSHIP⁶

Use a VCPR as the basis for medication decision-making.

The basis for a herd health management plan is working with a veterinarian. The establishment of a working relationship between the producer and a veterinarian is



critical in order to develop herd health plans, administer and monitor treatments and vaccinations, monitor and adjust herd health strategies and develop an emergency preparedness plan for the farm. The veterinarian can create a tailored plan to meet individual herd health needs taking into consideration farm-specific factors such as the disease profile of the herd and the type, age and location of production and facilities.

VCPR PURPOSE

Regular observations of the herd by a veterinarian are not only beneficial in maintaining a healthy herd, they also fulfill the requirements of a VCPR. A veterinarian can observe the pigs in their current environment and review production, vaccination and treatment records and other veterinary information in evaluating the health status of the herd. In addition, any health problems that have been noted since the last visit can be discussed and addressed. Many times, a veterinarian can provide a “fresh set of eyes” and may observe subtle problems that have gone unnoticed by caretakers seeing them every day.

According to the American Veterinary Medical Association, a VCPR is defined as a relationship in which:

1. A veterinarian has assumed the responsibility for making medical judgments regarding the health of the animal(s) and the need for medical treatment, and the client (the owner of the animal(s) or other caretaker) has agreed to follow the instructions of the veterinarian.
2. There is sufficient knowledge of the animal(s) by a veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s).
3. The practicing veterinarian is readily available for follow-up in case of adverse reactions or failure of the regimen of therapy.

**Note: It is important to be familiar with both state and federal definitions of veterinary oversight as regulations are subject to change.*

VCPR AND THE PRODUCER

The herd medical decisions should be in the control of a veterinarian and the producer/caretaker. If a veterinarian has agreed to evaluate or medicate an animal, any instructions for treatment must be followed by the caretaker if the VCPR is to remain valid. It is illegal for a caretaker to administer an antimicrobial for any indication other than what is on the label unless prescribed or directed by a licensed veterinarian. It is illegal for anyone, including a veterinarian, to administer feed grade antimicrobials in any manner other than what is specifically outlined on the label. If the caretaker does not follow a veterinarian's instruction for treatment, the VCPR is no longer valid.

VCPR AND THE VETERINARIAN

If a veterinarian accepts the responsibility for the administration of a drug under a VCPR, then he or she is also responsible for providing continued care if needed, even if it is arranged with another veterinarian. This veterinarian must be readily available for consultation and reevaluation of treatment results.

To have sufficient knowledge of the animals to initiate a general or a preliminary diagnosis requires that a veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examination of the animal(s), recent diagnostic information for the herd or by medically appropriate and timely visits to the premises where the animal(s) are kept.

VCPR AND THE USE OF APPROVED ANIMAL DRUGS

By having a VCPR, the producer and a veterinarian can develop a tailored plan to use medications to treat diseases, manage pain and inflammation, and manage reproductive status on the farm. Medications are a tool pork producers use to bring a healthy pig to market. The availability and number of drugs for use in food animal medicine has historically been limited. There are several ways that producers and veterinarians can have access to medications to treat sick animals. Medications fall into different categories: over-the counter (OTC), prescription (RX) and veterinary feed directive (VFD).



- **Over-the-Counter (OTC)** – There are some medications available over-the-counter (OTC) at locations such as feed stores or animal supply outlets. The producer must use OTC drugs only as specified on the manufacturer’s label unless directed for an extra-label use by a veterinarian. For example, using injectable penicillin OTC at a higher dose than written on the manufacturer’s label requires a veterinarian’s direction.
- **Prescription (RX)** – Prescription drugs are those for which the FDA requires professional oversight for labeled use. These drugs are available only through veterinarians, pharmacists and distributors on the order of a veterinarian. With the exception of OTC medications, a prescription is required for medication use including extra-label drug use. A prescription drug can be identified by the language on the drug label stating, “CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.” A veterinarian will supply information about the animal(s) to be treated (identity), dose, route, frequency of administration and the withdrawal time along with his or her contact name, address and phone number.⁵³
- **Veterinary Feed Directive (VFD)** – A veterinary feed directive (VFD) drug is an antimicrobial intended for use in, or on, animal feed.⁵¹ Feeds containing a VFD product can only be used with veterinary oversight by a licensed veterinarian issuing a VFD. Once a veterinarian has the basis for making a diagnosis, he or she can issue a VFD order. A veterinarian provides the original VFD to the client (producer) for use to obtain feed from a distributor, or provides it directly to the distributor, while providing the client with a copy of the VFD order. This document allows the producer to buy medicated feed containing the VFD drug. The veterinarian, producer and the distributor of the VFD feed are all required to keep the VFD order according to FDA regulations.

Antibiotics are a type of medication used to treat bacterial infections in pigs. They are further divided into two classes:

- **Medically Important Antibiotics:** Classes of antibiotics that are important for treating human diseases, eg. Beta lactams (penicillins),

Tetracyclines (OxyTet, Tet, Chlortet), Fluoroquinolones (Enrofloxacin), etc. [list is not exhaustive]

- **Not Medically Important Antibiotics:** Classes of antibiotics that are NOT important for treating human diseases, e.g. ionophores are currently considered not medically important.

FDA Guidance and Antibiotic Use:

On January 1, 2017, the FDA guidance related to the use of medically important antibiotics in food and water went into effect. This guidance focuses on those antibiotics that are considered important for treating human infection and are approved for use in feed and water of food animals. Medically important antibiotics can no longer be used for nutritional efficiency in food animals, and the remaining therapeutic (prevention, control and treatment) uses of these products have moved from their current OTC availability to only available by VFD for the feed or prescription for the water. Producers should follow the directions on the product label or given by a veterinarian and have a valid VCPR. Additional guidance is expected to move the remaining OTC antibiotics under the oversight of veterinarians as prescription only in the next few years.

OTHER VCPR CONSIDERATIONS

Compounding drugs and residue testing are two other considerations affected by a VCPR.

- **Drug compounding** is the mixing of two or more FDA-approved drugs to make a different medication for the needs of a particular patient. The mixing of two injectable drugs together in a bottle or syringe is compounding. Because the interactions of the different components may lead to the formation of new compounds or cause destruction or precipitation of active or inactive ingredients, setting a withdrawal time may be difficult. The use of compounded drugs may result in adverse reactions or deaths of animals. Under AMDUCA, a veterinarian with a VCPR may be permitted to compound FDA-approved drugs following rules very much like those for extra-label drug use. The veterinarian is then responsible for the safety, efficacy and withdrawal time of the compounded drug. Compounding by producers or distributors of animal health products is prohibited.



- **Residue avoidance** starts with the identification and documentation of all treated animals including the date(s) of treatment, the product administered, dosage given and withdrawal time. However, animals sometimes lose ear tags, get out of their pens and have accidental access to medicated feeds, or sometimes treatment records are lost or destroyed. When questions arise about the residue status of an animal or a group, testing of live animals is necessary. The risk to the reputation of the producer as well as that of the industry far exceeds the cost of having the animals tested before marketing. Because finding a kit or laboratory for this service may be difficult, producers should have a plan of what to do before a residue test is actually needed. Contact information should be recorded in the herd's emergency response plan. When there is any doubt about the residue status of the animals, they should be tested rather than a withdrawal time guessed.

Any extra-label use of medication in feeds, including VFD feeds, is illegal by regulation 21 CFR 530.11.⁴⁶



MEDICATION ADMINISTRATION

Correctly store and administer animal health products.

Properly administering medication is a key component to providing safe food, free from violative drug residues. Medications are administered to pigs in three ways: orally, topically or by injection. Each administration route has advantages and disadvantages based on the situation. Specific instructions regarding the correct administration of specific medications are found on the drug label.

To responsibly administer animal health products:

- Read, understand and follow label directions when giving any medication.
- Devise a medication record and animal or group ID system that enables all caretakers to know the medication status of animals prepared for harvest.
- Identify all treated animals.
- Keep records for making judgments about marketing animals that have been treated.
- Use medication records to determine when withdrawal times have been completed.

ORAL

Oral medications are those that are given through the mouth. They may be given to pigs individually or when a large number of animals are to be medicated through water or feed. These routes are less stressful to the animals as well as to the people giving the medication. An added benefit to oral medications is that there is no risk of broken needles or injection-site reactions.

Medicated feed may be the method of choice when treating animals for multiple days in succession. When using medicated feed, all instructions on the feed tag or delivery slip must be followed. Residual feeds should be removed from bins and feeders so that the medicated feed is introduced rapidly and in proper concentration. Feed intake should be monitored because medication must meet therapeutic levels to be effective and may not reach these levels if daily feed intake is reduced.

Medications can also be given in the pigs' drinking water. Medicated water can be delivered to the pigs quickly in facilities that have a water medicator installed in the supply line and can therefore supply a temporary source of medicated water. Medicated water can also be delivered in stationary drinking containers provided at the correct dosage of medication for the current water consumption. Water medications are a flexible treatment option allowing for the modification of dosage based on current water consumption patterns. For some bacterial diseases, individual oral treatment may be necessary because it is the only route that can guarantee therapeutic levels.

TOPICAL

Some medications are administered by applying them to the skin of the pig. Examples include sprays, dusts, pour-ons and dips. Most of the topical medications are for parasite control or for skin medications. Care must be taken to prevent chilling of pigs when using sprays or dips in cold weather.



INJECTABLE

Injections are useful when treating individual animals and may be the only practical way of medicating pigs that are too sick to eat or drink and for some medications that are poorly absorbed from the gut. Injections can be given in the muscle, under the skin, in the abdominal cavity, in the bloodstream or in the nasal passage. Note: intranasal is not an injectable as it is sprayed or used in a mist to deliver the vaccine into the pig's nasal passage.


DRUG LABELS

The drug label provides important information to producers about the storage and administration of medication. Labels should be read and understood before giving any medication. If the medication is being used in an extra-label manner, the written use and restrictions from a veterinarian should be followed. Before administering animal health products it's imperative to read and understand the contents of the drug label. Drug labels contain:

- Trade Name
- Active Ingredient
- Indications
- Dosage and Directions for Use
- Precautions
- Warnings
- Withdrawal Times
- Manufacturer's Lot Number
- Expiration Date

Fictional Medication Label

Trade Name	Omnibiotic (Hydrocillin in Aqueous Suspension)	Active Ingredients										
Directions for Use	Directions for use: For use in Beef Cattle, Lactating and Non-Lactating Dairy Cattle, Swine and Sheep <i>Read Entire Brochure Carefully Before Using This Product</i> For Intramuscular Use Only	Directions for Use										
Indications	Active Ingredients: Omnibiotic is an effective antimicrobial preparation containing hydrocillin hydrochloride. Each ml of this suspension contains 200,000 units of hydrocillin hydrochloride in an aqueous base. Indications: Cattle - bronchitis, foot rot, leptospirosis, mastitis, metritis, pneumonia, wound infections. Swine - erysipelas, pneumonia. Sheep - foot rot, pneumonia, mastitis and other infections in these species caused by or associated with hydrocillin-susceptible organisms.											
Dosage	Recommended Daily Dosage The usual dose is 2 ml per 100 lb. of body weight given once daily. Maximum dose is 15 ml/day. <table border="1"><thead><tr><th>Body Weight</th><th>Dosage</th></tr></thead><tbody><tr><td>100 lb</td><td>2 ml</td></tr><tr><td>300 lb</td><td>6 ml</td></tr><tr><td>500 lb</td><td>10 ml</td></tr><tr><td>750 lb or more</td><td>15 ml</td></tr></tbody></table> <i>Continue treatment for 1 or 2 days after symptoms disappear.</i>	Body Weight	Dosage	100 lb	2 ml	300 lb	6 ml	500 lb	10 ml	750 lb or more	15 ml	Administration Route
Body Weight	Dosage											
100 lb	2 ml											
300 lb	6 ml											
500 lb	10 ml											
750 lb or more	15 ml											
Cautions & Warnings	Caution: 1. Omnibiotic should be injected deep within the fleshy muscle of the neck. Do not inject this material in the hip or rump, subcutaneously, into a blood vessel, or near a major nerve because it may cause tissue damage. 2. If improvement does not occur within 48 hours, the diagnosis should be reconsidered and appropriate treatment initiated. 3. Treated animal should be closely observed for at least 30 minutes. Should a reaction occur, discontinue treatment and immediately administer epinephrine and antihistamines. 4. Omnibiotic must be stored between 2° and 8° C (36° to 46° F). Warm to room temperature and shake well before using. Keep refrigerated when not in use. Warning: Milk that has been taken from animals during treatment and for 48 hours (4 milkings) after the last treatment must not be used for food. The use of this drug must be discontinued for 30 days before treated animals are slaughtered for food.	Storage Requirements										
Sizes Available	How supplied: Omnibiotic is available in vials of 100 ml. Lot # 56789B Expires June, 20XX	Withdrawal Times										



MEDICATION STORAGE

Correctly store and administer animal health products.

In addition to properly administering medication and reading drug labels, producers and animal caretakers must know the ins and outs of medication storage. This includes understanding and implementing the defined storage of the medication, maintaining medication inventory records, keeping drug use records and properly disposing of medication.

DRUG AND VACCINE STORAGE⁴⁵

Medication should be viewed as a perishable commodity. Medications must be protected from damage by environmental conditions and from contamination. The effectiveness of a stored drug may be quickly diminished by temperature extremes or exposure to sunlight. Most medications require storage in a clean, dry and dark location. Some drugs are best stored at room temperature while others require refrigeration. Most vaccines and some antibiotics should be refrigerated at 35°- 45°F. Always refer to the label for the correct storage instructions of any product. As a rule, once a bottle has been

opened, it should be stored in a separate, dedicated refrigerator unless specifically directed otherwise by the labeled instructions. It should be stored separate from human food.

To avoid using medications that have lost some of their potency, the supply of medication should be limited to only what will be used before the expiration date. Routinely check medication inventory and sort medications by expiration dates to make sure that products with older dates are used first. Periodically check products for expiration and properly discard those that are expired.

In addition to preserving the efficacy of drugs in storage, it is also important to maintain their identity. If a product is transferred to another container, the new container must be clearly labeled to prevent misidentification, misuse and for the safety of caretakers.

Do not store products in a syringe for later use. These syringes are often unlabeled, so one medication may be mistaken for another resulting in unsatisfactory treatment response, withdrawal time mistakes or safety hazard. Syringes do not provide the protection from contamination and sunlight degradation like a colored glass vial. Additionally, syringes that have been cleaned and disinfected may have a soap or disinfectant residue that can inactivate the drug or vaccine left in them for a period of time. Medication must be stored in a way to prevent contamination. Injectable medications should be kept in a tightly sealed, clean bottle.

For many vaccines, the label directions will state, “Use the entire contents immediately when opened.” These vaccines lose their effectiveness rapidly and should be discarded, according to the label, if not used after they are opened or rehydrated.

DRUG INVENTORY AND USE RECORDS

Producers are encouraged to keep drug inventory and use records as outlined in the recordkeeping section of this chapter.

These records will reflect trends in medication use by comparing the treatments in one period with another and can be used for accountability. Periodic (i.e. monthly, quarterly or annually) reconciliation between inventory and use should be completed to ensure the medication records match the inventory

use records over the time allocated. If purchases far exceed the amount indicated on medication records, management should determine if not all treatments are being recorded, if medications are being wasted or if shrinkage has occurred.

MEDICATION DISPOSAL

Minimize environmental exposure through proper handling and disposal of all animal health products, including antibiotics.⁴⁴ Water medicators and feeders need to be properly adjusted to deliver the desired dose and avoid spillage and waste. Ensure proper handling and disposal of any outdated or unused animal health products through communication and caretaker training. Do not dispose of medication into pits, drains or toilets. If you are unsure how to properly dispose of the medication, contact the manufacturer for instructions.

Sewage systems and septic tanks are not designed to remove antibiotics and other medications from the discharge water.

Regulations regarding the disposal of unused antibiotics vary from state to state. Unless specifically prohibited by local regulations, antibiotic preparations that are no longer wanted should be discarded in a commercial sanitary landfill. These landfills are monitored by the Environmental Protection Agency and engineered to prevent leachate from contaminating ground water.

ANIMAL IDENTIFICATION

Animal identification, tracking and record keeping are essential parts of preventing violative residues in pork. Even before there is a need to treat an animal, caretakers should decide on a reliable method for identifying and tracking animals on the farm.

Caretakers must be familiar with site-specific identification systems.

Producers must be able to reliably identify treated pigs or groups of pigs from the time they receive the medication until they have completed their withdrawal time. Producers must also be able to keep up-to-date medication records on all treated pigs. To prevent violative residues, unless otherwise directed by a veterinarian, follow label directions for dosage, administration, withdrawal times. Marketing



decisions for sows and small roaster pigs often put these animals at a higher risk, and special attention to animal weights, dosage, administration and withdrawal times must be taken when medicating these types of animals to prevent violative residues.

The majority of packers and processors that harvest breeding stock are requiring official premises identification tags (official PIN tag) as a condition of sale. Official PIN Tags purchased with a unique management number imprinted on the tag can be used to reliably and uniquely identify individual breeding stock in medication records.

TREATING PIGS AS GROUPS

When individual animal identification is not practical, a whole pen or building can be tracked and retained with a group or lot identification number until the medication withdrawal time has elapsed.



Medication record templates can be found in the resources and forms section of the handbook. To be effective, each nursery, grower and finisher pen should be uniquely and visually identified in a systematic manner. Do not rely on descriptions such as “third pen on the south side” as it is more likely to cause confusion or misinformation to occur in marketing decisions.

When treated animals are identified by pen, room or group number, it is important that the entire group remains intact until the withdrawal time has elapsed. Any pig removed from the group should be individually identified and their withdrawal time recorded.

Producers must keep medication and treatment records for 12 months from the last day of treatment.

TREATING PIGS INDIVIDUALLY

When individual animal identification is practical, there are many acceptable methods to use:

- Tattoos – these are permanent, but depending on the type, the tattoo may be hard to apply and difficult to read at a distance.
- Ear tags – visual tags and external RFID devices are the easiest to see but are more cumbersome to apply than some other methods.

- A card that stays with the animal – This works best for adults housed individually in a pen or stall.
- Paint marks – these are easy to apply and can be used temporarily, but may rub off or rub onto untreated pen mates.
- Ear notches – these can be recorded on a card to identify treated animals.

RECORD KEEPING

Accurate record keeping is vital to ensuring violative residue-free pork products. Along with maintaining detailed animal identification, medication records play a pivotal role in tracking medicated animals.

MEDICATION RECORDS

Maintain medication records including withdrawal times.

There are several reasons related to food safety for keeping records of all medications given to food producing animals. The primary reason is to make sure withdrawal times have elapsed before marketing. Keeping and maintaining records is also a basic expectation of regulatory officials. Medication records provide documentation that demonstrates a drug was used properly. In instances in which a violative residue found at harvest has been traced to a farm, the producer will be expected to provide complete medication records to the investigator.

MEDICATION RECORDS AS A MANAGEMENT TOOL

Medication records can also be useful as a management tool when formulating disease-control strategies. Important management questions to consider when reviewing medication records include:

- Are more animals being treated this year than last?
- Has the response to treatment been effective?
- Which treatment for pneumonia gives the best response?

Periodic review of the medication records and the pig’s response to treatment can be discussed with a veterinarian as part of the VCPR and herd health plan. If changes in herd health are noted, a veterinarian can work with the producer to determine if additional investigation and potential health changes need to be made.



MEDICATION RECORDS AS A STANDARD OPERATING PROCEDURE

FDA Compliance Policy Guide (CPG) 7125.37—Proper Drug Use and Residue Avoidance by Non-Veterinarians outlines the records the FDA expects to see as part of the operation’s standard operating procedure for using animal-health products.⁵² The FDA expects producers to maintain medication records that include:

- The date(s) of treatment, including last date of administration.
- The identification of the animal(s) that were treated
- The drug(s) administered.
- The amount of each drug administered.
- The route of administration.
- The person who administered each drug.
- The withdrawal time prior to harvest.

Producers may find it beneficial to record additional information in order to more accurately track treatments and withdrawal times. Additional information to help more accurately track treatments include:

TABLE FS.1 ANIMAL MEDICATION RECORD (MINIMUM REQUIREMENT)						
Date	ID	Product name	Dose	Route	Given by	Withdrawal Time
4/22/25	210	Tylosin	3 ml	IM	W.P.	14 days

- The approximate body weight of the animal treated to verify that the amount of drug given was appropriate
- The medical problem that prompted treating the animal (e.g., pneumonia, diarrhea)
- Calculated date the withdrawal will be completed
- The approved extra-label drug use (ELDU)¹⁴

TABLE FS.2 ANIMAL MEDICATION RECORD (SUGGESTED INFORMATION)													
Date (mm/dd/yy)	Animal /Pen/ Barn ID	Body Wt.	Reason for Treatment	# Medicated	Product Name/ Concentration (mg/ml)	Amount Given (ml/water)	Route ¹	Initials of Who Administered	Pre-slaughter Withdrawal (days)	Date Withdrawal Complete (mm/dd/yy)	Date/ Treatment results ²	ELDU ³	Advising Veterinarian

¹IM=Intramuscular; SQ=Subcutaneous; IN=Intranasal; Water; Feed ²Sold; Recovered; Died ³Veterinarian Name / Contact information for Extra-Label Drug Use

- » The name and contact information of the advising veterinarian for the ELDU should be recorded at the bottom of the table

MEDICATION AND DRUG USE INFORMATION

Gathering information about medication and drug use prior to administering animal health products will ensure accuracy in the method of administration, calculation of withdrawal time and the elimination of violative residues.

MEDICATION INFORMATION

Mixing together injectable or water medications, including antibiotics, by producers is illegal. As an example, it is illegal to mix an antibiotic and iron together on the farm for use while processing piglets.

Certain FDA-approved, commercially-available, feed-administered medications may be legally mixed on farm. If a combination, including feeding levels, is not approved by the FDA, then it is illegal. Information about these legal combinations is available from a veterinarian or a nutritional advisor.

DRUG USE INFORMATION

The drug label is the first place a caretaker should look to when identifying drug use information; however, there are several other places to find details about using FDA-approved products.

Most medications are packaged with a printed “insert.” The insert is considerably longer and more technical than the label. In addition to the withdrawal time, the insert will provide information about the indications for use, mode of action, adverse reactions, toxicity to humans and animals and a more complete dosage schedule.

Detailed descriptions of all FDA-approved new animal drugs can be found from any search engine using the words, “Animal Drugs @ FDA.” The search will lead to the webpage fda.gov/animal-veterinary/products/approved-animal-drug-products-green-book where the “Green Book Reports” can be reviewed.⁴⁷ Changes in drug use approvals and withdrawal times do occur, and printed charts may contain outdated information. Always check the container label and websites for the most current drug use information. If there is any doubt about the proper withdrawal time, contact a veterinarian. Remember, the printed withdrawal time is valid only when the drug is given according to the label directions for species, route, dosage and condition.

WITHDRAWAL TIMES

Withdrawal time is the period required for medication to be metabolized, broken down or excreted so the level remaining in the body of an animal at harvest is below the level established as safe for humans.⁴⁰ Ensuring an accurate withdrawal time helps producers deliver residue-free pork products to consumers.

WITHDRAWAL TIME IDENTIFICATION AND AWARENESS

Nearly all injectable vaccines are labeled with a 21-day withdrawal time.

The withdrawal period is established by the Food and Drug Administration and based on the results of extensive testing. If a drug has a withdrawal time, it will be located on the label, package insert or feed tag. If drugs are used in an extra-label manner, a veterinarian must assign an adequate withdrawal time so there are no violative residues at harvest.

Other countries may require withdrawal times different than the United States for some products. For example, Japan has different withdrawal times for various drugs and medications. If the packer exports to Japan, be sure to communicate with the packer to determine the appropriate withdrawal time for medications producers plan to use. For additional information regarding export maximum residue level (MRL), consult your veterinarian and packer. Packers may also inform producers of their alternative markets and the corresponding required withdrawal times.

As a reminder, nearly all injectable vaccines are labeled with a 21-day withdrawal time. If there is a possibility

a pig will soon be sold as food, it should not be vaccinated unless the withdrawal time can be met.

CALCULATING WITHDRAWAL TIME

Each withdrawal day is a full 24 hours starting with the last time a pig is treated or has had access to a medicated feed, water, topical or injectable product. For example, if a pig is last treated at 9 a.m. on Friday with a drug that has a five-day withdrawal, the withdrawal would be completed at 9 a.m. on the following Wednesday.

In the case of medicated feed or water, the withdrawal time begins when all the medicated feed is removed from the feeder or the water supply has been cleaned and flushed. The withdrawal period starts at the time the medicated feed or water is physically removed from the pigs’ environment, not the last time the feed bin was filled with medicated feed or medication was put in the water supply.



INJECTIONS

Injections are useful when treating individual animals and may be the only practical way of medicating pigs that are too sick to eat or drink, or for administering medications that are poorly absorbed from the gut. When giving injections, it is important to consider the types of injections, how to correctly administer the injections and how to properly use and care for the equipment used before, during and after injections.

TYPES OF INJECTIONS

There are five types of injections: intramuscular, subcutaneous, intraperitoneal, intravenous, and intranasal. Each method requires a defined procedure to ensure correct needle and medication placement. To find the appropriate method of administration, read the drug label. It is also important to properly identify



the pig prior to drug administration. Refer to the animal identification section of this chapter for more information regarding animal identification. Injections do present a risk of broken needles and injection-site reactions, so remember that some form of restraint may be needed to administer injectable drugs and only inject into clean, dry areas.

- **Intramuscular (IM):** In the Muscle
- **Subcutaneous (SQ):** Under the Skin
- **Intraperitoneal (IP):** In the Abdominal Cavity
- **Intravenous (IV):** In the Vein
- **Intranasal (IN):** In the Nasal Passages

** Injection either by IP or IV SHOULD BE USED ONLY UPON VETERINARY INSTRUCTION and guidance as serious injury, including death of the pig, can occur.

The most common method of injection is intramuscular. Below are the guidelines caretakers should use in performing this type of injection.

- Use a spot on the neck just behind and below the ear, but in front of the shoulder.
 - » Do not use a needle to inject in the ham or loin, unless directed to do so by a veterinarian. There may be some bleeding and bruising of the muscle followed by scarring. This scar can stay in the muscle for the life of the pig and be a blemish in the cut of meat. This standard applies to sows, as well as to market swine. While sows may not be going to market soon, they are at greater risk for blemishes because of the repeated injections they typically receive over their productive life in the form of vaccinations and farrowing medications.
- Use the proper size and length of needle to ensure the medication is deposited in the muscle, and not into other tissues.

NEEDLES AND SYRINGES

Proper use and care of needles and syringes is important to the correct and safe administration of animal health products. Take care when practicing appropriate use, technique and disposal procedures as outlined as follows.

NEEDLES, SYRINGES AND SCALPEL BLADES DISPOSAL

Used needles and scalpel blades are called “sharps” and must be disposed according to state medical waste regulations to prevent environmental contamination and injury to fellow workers, children, waste handlers and livestock. Proper disposal involves placing sharps in a rigid, puncture-resistant container immediately after use. Glass containers are not acceptable for sharps disposal because the container may break. Commercially available containers can be purchased from farm supply stores, safety supply stores, drug stores or veterinarians.

Regardless of the container type, it should prevent the penetration of needles both on the farm and throughout transport to the final disposal location. Sharps containers must be clearly labeled as a biohazard waste container not for recycling. When the container is full, the cap or lid should be securely tightened and sealed with heavy tape. For the rules that apply to the farm, contact the agency in charge of overseeing the disposal of biomedical wastes in the state. The website epa.gov provides information about agencies in each state that regulate biomedical or infectious waste disposal, and community options for safe needle disposal. Approved sharps collection stations are available in some regions. Another option may be to ask a veterinarian or a local hospital if they accept farm-generated medical wastes.^{42,43}

TABLE FS.3 RECOMMENDED NEEDLE SIZE FOR IM AND SQ INJECTIONS

	Intramuscular (IM) Injections		Subcutaneous (SQ) Injections	
	Gauge	Length	Gauge	Length
Baby Pigs	18 or 20	5/8" or 1/2"	18 or 20	5/8" or 1/2"
Nursery	16 or 18	3/4" or 5/8"	16 or 18	1/2"
Finisher	16	1"	16	3/4"
Breeding Stock	14 or 16	1" or 1 1/2"	14 or 16	1"

MAINTENANCE AND STORAGE OF SYRINGES AND NEEDLES

Proper cleaning, maintenance and storage of all equipment used for administering injections will ensure the correct dose is given to each pig and that



contamination of a product is prevented. Some key practices for proper syringe management include:

- Properly discard of disposable syringes immediately after use.
- Rinse out reusable syringes with hot water. Do not use soap or other disinfectants on the inside of any syringe.
- Wipe down the exterior of syringes with water and mild soap to remove any dirt or debris.
- Store syringes in a clean area or box and allow them to dry between uses.
- Periodically lubricate and replace parts as needed.
- Periodically check the calibration of reusable syringes for accurate dosing of medications and vaccinations.
- Clean the vial's rubber stoppers before inserting a needle.
- Use only clean needles to withdraw contents from multi-dose vials.

BROKEN AND BENT NEEDLES

Pork Checkoff-funded research on needle strength shows disposable needles will rarely break during the initial use. However, the needle shaft is much more likely to break if it has been bent during an injection, straightened and used again, or after repeated use.

A standard operating procedure (SOP) for needle inventory, technique, and use for the farm will help address needle breakage in a logical, consistent way. Implementing a needle inventory recordkeeping form can be used as a tool. Everyone involved at the farm, including management, caretakers and family members, need to understand and follow the SOP to be acquainted with how issues such as needle breakages are to be handled. When needle breakage occurs, it must be reported with honesty.

Never straighten and reuse a bent needle. Always carefully discard and replace it.

TABLE FS.4 DEVELOPING A NEEDLE-USE SOP

HOW TO PREVENT BROKEN NEEDLES

Evaluate the strength and detectability characteristics of the needles used

- This includes the quality of the needles and hub

Provide needle-use guidelines to all caretakers that address how to:

- Ensure proper animal restraint. For example for finishing pigs use a sort board. For baby piglets hold under the belly of animal.
- Select the proper injection site and injection technique (i.e. IM or SQ).
- Select the proper GAUGE and LENGTH of needle according to the pigs age, the injection site selected and the characteristics of the product to be administered.
- Change the needle when appropriate to maintain cleanliness and sharpness. Pork Checkoff research has shown after every 10 pigs injected, the sharpness of the needle becomes more dull.
- Safely remove and replace bent needles. NEVER STRAIGHTEN A BENT NEEDLE. This is for the safety of both the animal and caretaker.
- Minimize the loss of needles in areas occupied by pigs. Caretakers need to know how to retrieve dropped needles so they are not chewed on by curious pigs. They may become lodged in the tissues around the mouth, throat and jowls of sows and market pigs.
- Consider the reasonable number of needles to use for a particular job. Once determined, account for and reconcile the number of needles at the beginning of the job and once it is finished.
- Recommend recording needle use on the needle inventory form provided.
- Safely discard used needle (tips) in a sharps container. Note: It is NOT recommended to recap needles prior to discarding. If you must recap, do so in a safe way that minimizes the chance of worker injuries and needlesticks. For more information, see Safe Pig Handling 2 at porkcheckoff.org



TABLE FS.4 DEVELOPING A NEEDLE-USE SOP

IDENTIFY PIGS THAT ARE SUSCEPTIBLE OR AT RISK OF CARRYING A BROKEN NEEDLE

Establish a plan for immediately identifying pigs known or suspected of harboring a broken needle fragment

- Provide caretakers appropriate training on how to handle the plan developed.
- Temporarily identify animal with a paint stick or paint spray.

Provide permanent identification that is recognizable by all caretakers and packers

- Ear tag
- Ear notch

Record all pertinent information regarding the event

- This information could include activity, location where broken needle occurred (i.e. pen, stall, room) needle gauge and length, injection site, restraint, person(s) giving the injection, and person who reported the broken needle.
- For more information regarding medication recordkeeping, refer to the recordkeeping section of this chapter under the Medication Storage Section.

COMMUNICATE WITH THE PACKER

Determine the packer's notification and payment policies for at-risk pigs. Use the information gathered to develop the needle SOP for the operation

- How is the producer to contact and notify the packer about an at-risk pig?
- When should the producer notify the packer?
- What information needs to be provided to the packer i.e. gauge and length of needle, brand of needle, location and injection site of broken needle?
- How are the pigs to be identified as susceptible of carrying a broken needle?
- How will producers be informed from the packer if their pig(s) are found with a broken needle?

Keep broken needles out of the pork supply chain and finished product to help maintain the confidence of consumers when purchasing pork products.

- No matter where a pig is marketed, buyers or processors must be informed of any pig(s) potentially at-risk for carrying a broken needle

ON-FARM MEDICATION ADMINISTRATION OPTIONS

Needle-free injection systems eliminate the issue of broken needles in carcasses. In Pork Checkoff sponsored research, vaccines administered by needle free injection produced immunity equal to that of conventionally administered vaccines. No injection-site reactions were noted with either the needle-free or conventional methods of this trial.

Effective vaccines and antimicrobials, which can be administered through the drinking water, are also available today. These products are completely needle free. As always, contact your herd veterinarian or animal health supplier about such products.

There are a variety of injection devices to reduce the incidences of broken needles and needle stick injuries.

FEED PROCESSING AND SAFETY²

Swine nutrition and feeding management is a complex process. Feed costs are the number one cost of production. The initial step in feeding management is feed processing. However, providing a low-cost diet that meets the specific nutritional requirements of the animals is only one consideration. This section will highlight several feed processing protocols that must be followed in order to ensure safe, wholesome pork products for human consumption.



CURRENT GOOD MANUFACTURING PRACTICES

Follow proper feed processing and feed biosecurity protocols.

Producers should follow a set of guidelines for processing non-medicated and medicated feed, referred to as current Good Manufacturing Practices (cGMPs). These guidelines provide reasonable assurance that the feed is manufactured accurately and helps ensure safe, wholesome pork products for human consumption. The following cGMPs outline the standards for nonmedicated and medicated feed manufacturing facilities, ingredients, the manufacturing process, monitoring, labeling and records needed to assure a feed product is suitable to feed for pigs intended for human consumption. It is critical to follow the additional requirements for medicated feeds to ensure pigs receive proper dosages of medication and proper withdrawal times are observed.

The FDA requires that Veterinary Feed Directive (VFD) orders be kept for two years after date of issuance.

FEED BIOSECURITY PROTOCOL

Feed can serve as a vector for certain diseases that affect both swine and human health. Care should be taken when handling, processing and storing feed and feed ingredients in order to limit the possibility of contamination by rodents and other pests.

In order to provide a healthy, unadulterated feed product to livestock intended for human consumption, the rodent population in and around feed manufacturing facilities must be controlled. Since rodents can serve as disease vectors, this greatly reduces the possibility of the transmission of diseases that have animal and human health implications. All feed and feed ingredients should be stored in proper bins or containers that are rodent proof and have a properly sealed lid. Feed and feed ingredient spills should be cleaned up immediately. Traps and bait stations should be used where appropriate and a sterile zone should skirt the facility. For specific information regarding creating a sterile zone around the facility, refer to the biosecurity section of this chapter.

BUILDING AND GROUNDS cGMPs

For All Feeds

- Prevent accumulation of dust that could contaminate complete feeds and present a fire hazard.
- Construct premises to ensure access for maintenance, ease of operation, cleaning, pest control and minimize the possibility of feed contamination.
- Ensure adequate space exists for equipment, processing and storage of feed and feed ingredients.
- Employ inspection and control procedures to secure compliance with required standards for production, storage and transport of feed and feed ingredients.

For Medicated Feeds

- No additional processing protocols for medicated feeds.

EQUIPMENT cGMPs

For All Feeds

- Check equipment to be sure it can produce feeds that meet intended nutritional levels, safety and purity.
- Clean up spills, fix leaks in equipment and prevent build-up of feed ingredients.
- Check scales, mixers and metering devices to ensure they are accurate, functioning properly and are suitable for their intended purposes.
- Monitor all equipment used in the manufacturing of feed regularly to ensure its functionality.
- Use equipment that is of suitable size and construction to facilitate maintenance, cleaning and adjustments as needed.
- Avoid contamination of equipment used to transport or store feed.
- Do not reuse bags or totes as packaging unless cleaned using appropriate and documented procedures.
- Use approved lubricants and coolants. Use of non-approved products may introduce chemical residues into the feed. Equipment used for manufacturing dry feed should be thoroughly dried following any wet cleaning.



- Minimize the potential for cross-contamination of feed during mixing.
- Observe good animal feeding practices that minimize biological, chemical and physical risks.

For Medicated Feeds

- Use methods such as flushing, sequencing and physical clean-out between batches of feed and feed ingredients containing restricted or potentially harmful material and between medicated and non-medicated feed.
- Clean transport vehicles and feeding equipment used for medicated feed if a different feed is to be used next.
- Use separate production lines where necessary.

WORKPLACE AND STORAGE cGMPS

For All Feeds

- Design workspaces and storage areas to avoid accidental contamination of feed.
- If mixing non-medicated and medicated feeds at the same location, ensure that non-medicated feed work areas, equipment and storage areas are physically separated from medicated feed work areas.
- Separate feed work areas from equipment or storage used for herbicides, pesticides, fertilizers and ingredients not intended for inclusion in feeds.
- Store processed feed and feed ingredients separately from unprocessed feed ingredients.
- Use precautions to minimize spoilage and condensation and limit fungal and bacterial growth in feed and feed ingredients.
- Use pest control programs to limit the possibility of the spread of disease that could have animal or human health concerns.
- Immediately clean up feed and feed ingredient spills.

For Medicated Feeds

- If mixing non-medicated and medicated feeds at the same location, ensure that non-medicated feed work areas, equipment and storage areas are physically separated from medicated feed work areas.

- Use inventory records to minimize the risk of unintended contamination of feed.

QUALITY CONTROL cGMPS

For All Feeds

- Periodically analyze feed and feed ingredients for their composition or ask a feed supplier for this information.
- Ensure feed ingredients produced on the farm meet the same requirements as feed ingredients sourced off the farm.
- Use scientifically recognized principles and procedures for sampling protocols and laboratory analysis.
- Use pathogen-control procedures to prevent contamination of feed with a pathogen that could cause disease in the herd.
- Apply good agricultural practices during all stages of the on-farm production of crops used as feed and feed ingredients for pigs.
- Ensure water used in feed manufacturing meets hygienic standards.
- Avoid contamination of equipment, feed and feed ingredients when disposing of sewage, other waste and rainwater.
- Use appropriate packing materials.
- Clearly mark, do not use and appropriately discard feed contaminated with undesirable substances.

For Medicated Feeds

- Conduct a laboratory assay to analyze feeds periodically for their nutritive or medication content or ask a feed supplier for this information.
- Establish equipment cleanout procedures for bins, trucks, augers and feeders including physical cleanout, flushing, sequencing of production and delivery sequencing to prevent unsafe cross contamination of feeds or carryover of medicated feed products.
- Clearly mark, do not use and appropriately discard medicated feed contaminated with undesirable substances.
- Minimize the potential for cross-contamination of feed during mixing.
- Observe good animal feeding practices that minimize biological, chemical and physical risks.



LABELING cGMPS

For All Feeds

- Label non-medicated feeds so they are easily differentiated from medicated feeds.
- Ensure the label accompanies bulk feed shipments and deliveries. The label should identify the product and contents, along with providing directions for use.
- Discard obsolete labels promptly.

For Medicated Feeds

- Receive, handle and store medications and their labels in a way that prevents confusion.
- Label medicated feed and feed ingredients consistent with regulatory requirements. Labels should describe the feed and provide instructions for its use.
- Make sure the correct label is fixed to all medicated feed containers received or stored.
- Ensure the proper medicated feed label accompanies bulk feed shipments and deliveries. Ensure the label identifies the product and contents, provides directions about use and states withdrawal times. Recognize that non-medicated feeds should have a different label than medicated feeds.

RECORDKEEPING cGMPS

For All Feeds

- Visually inspect received feed ingredients for quality or defects and keep written records containing the delivery date, method, carrier and any observations about color, weight or other quality measurements. These records will be useful if questions of feed quality or if contamination issues arise.
- Take samples of ingredients and finished feeds, identify appropriately and store for six months.
- Maintain proper feed inventory records that enable management to perform both trace-back and trace forward of each batch of ingredients to the group of animals that consumed it.
- Guide voluntary recalls of feed and feed ingredients by FDA procedures or appropriate corrective actions.

For Medicated Feeds

- Keep written records of medicated feed production. The medicated feed mixing records chart found in the resources and forms section of the handbook includes the minimum information that must be kept.
- Producers must retain records for two years from the date of order. Veterinarians must keep VFD orders for two years after the animals are treated.

EMPLOYEES cGMPS

For All Feeds

- Producers must provide training for all caretakers involved in the manufacture, storage and handling of feed and feed ingredients and document the training.

For Medicated Feeds

- There are no additional processing protocols for medicated feeds.

MEDICATION cGMPS

For Medicated Feeds

- Comply with federal regulations for medication concentrations when mixing feed.
- Identify animals receiving medicated feeds to ensure those animals receive the appropriate withdrawal period before marketing.







ANIMAL WELL-BEING

United States pork producers promise to PROTECT AND PROMOTE ANIMAL WELL-BEING.





ANIMAL WELLBEING

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ANIMAL WELLBEING RECORDKEEPING

Daily Observation Log

Euthanasia Action Plan

Ventilation Testing Record

Euthanasia Equipment Maintenance Record

Group Training Record

Individual Training Record

Individual Development Plan

Internal Self-Assessment

Assessment Corrective Action

See It! Stop It! Employee Agreement

Animal Welfare Policy

Whistleblower Policy

Standard Operating Procedure(s)

Daily Observations

Treatment Management

Piglet Processing Procedures

Caretaker Training

Animal Handling

Feeding and Watering protocols



GPP

ANIMAL WELLBEING GOOD PRODUCTION PRACTICES

Provide training to caretakers on animal handling, animal husbandry, and euthanasia

Conduct and document daily observations and provide prompt care to pigs in need

Assess the facilities and equipment daily to make sure the pigs' environment is safe and allowing access to feed and water

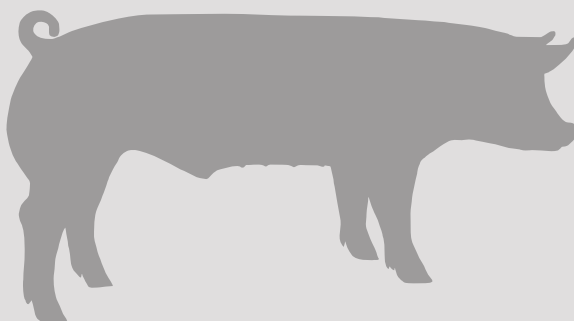
Implement a zero tolerance policy for animal abuse

Euthanize pigs in a humane and timely manner

Be prepared for emergencies related to animal well-being

Handle pigs using knowledge of pig behavior

Handle pigs according to their size and phase of production, using proper handling equipment



Pork producers are eager to explain how pigs are raised and cared for. Few people have firsthand knowledge of what modern pig farming looks like. Now more than ever, producers have access to many tools and resources to better care for animals and meet consumer demand. These advancements have helped make the US pork supply safer and more nutritious than at any time in the nation's history. No matter the farm, the basic tenet of animal agriculture is the same: Good animal care is imperative to produce healthy food for consumers. For pork producers, ensuring the well-being of animals is about more than taking care of business. It is part of America's agricultural heritage. U.S. pork producers are intent on preserving and building upon that legacy.

This chapter will take a close look at the following topics:

1. Caretaker Training
2. Proper Care for the Pig
3. Facilities and Management
4. Animal Handling and Transportation
5. Willful Acts of Abuse

CARETAKER TRAINING

Provide training to caretakers on animal handling, animal husbandry, and euthanasia.

The caretaker is someone who has daily responsibility to provide care for animals. One of the most important factors to good animal well-being is the husbandry skills of the animals' caretakers. The knowledge, training and attitude of the caretaker are the foundation upon which animal well-being is built. Research has shown that negative interactions between caretakers and their animals can limit the productivity and well-being of these animals, making training essential.

Caretakers must receive and be able to articulate training specific to their daily duties as detailed in the farm's written standard operating procedures and receive retraining annually. New caretakers who have not yet completed training should be directly supervised by someone who is trained. All caretakers must be PQA Plus Certified within ninety days of employment and maintain certification while employed.

TRAINING CONTENT

Training can come from training manuals, USBs, videos and online resources as well as from on-the-job training under the guidance of experienced caretakers.



There are at least three areas common to all production system training programs that address swine well-being. They are:

1. Euthanasia – Caretakers responsible for euthanasia must have documented training

and be familiar with the site's euthanasia plan. Trained caretakers should be able to articulate the farm's method of euthanasia for which they are responsible, handling methods used during euthanasia, confirmation of insensibility and death, carcass disposal, and cleaning and maintenance of equipment and supplies. *The On-Farm Euthanasia of Swine - Recommendations for the Producer* brochure outlines the methods and practical considerations for euthanasia of pigs and can serve as a training resource.

2. Handling – All transporters must be Transport Quality Assurance® (TQA®) Certified. Those loading animals for transport must be trained according to practices taught in PQA Plus or TQA. Additional training information on how to handle pigs, other than the information contained in this chapter, is available in the Transport Quality Assurance (TQA) Program and the *Swine Care Handbook*.
3. Husbandry – Caretakers responsible for piglet processing must be trained on the farm's standard operating procedures for processing. The Swine Care Handbook contains information about husbandry skills. Additional information on specific husbandry skills may be available from university extension services or area community colleges.

DOCUMENTATION OF TRAINING

Regardless of the type of educational program used for training and regardless of how formal or informal the training event for the animal caretakers, documentation of the training is important. Training records should include the date, topic of training, trainer, trainee and trainee signature.



STANDARD OPERATING PROCEDURES

Standard operating procedures (SOPs) provide caretakers a guide for the day-to-day execution of production practices to help ensure consistency and accuracy of the work being completed. The Pork Checkoff has resources to help producers establish training protocols and includes sample standard operating procedures that can be adapted to the specifics of a farm.

SOPs can be in paper or electronic form but need to be accessible at the farm. The farm or production site should have written SOPs for the following:

- Euthanasia
- Animal Handling
- Piglet Processing Procedures
 - » Specifically, castration and tail docking on sow farms that minimally complies with American Association of Swine Veterinarian (AASV) guidelines. For more information refer to aasv.org.^{4,5}
- Feeding and Watering Protocols
- Daily Observation
- Caretaker Training
- Treatment Management

PROPER CARE

Now more than ever, pork producers have access to many tools and resources to raise pigs and meet consumer expectations. No matter the type, size or location of a farm, every caretaker has an ethical responsibility to protect and promote the well-being of pigs in his or her care. Many factors within a pig's environment can influence this well-being and producers should do their part to follow particular guidelines and measures used to monitor and evaluate the well-being of pigs in their care.

CONDUCTING ANIMAL WELL-BEING ASSESSMENTS

Conducting site assessments on a regular basis is an excellent way to benchmark how the animal care practices are implemented and measure the animals' well-being on the farm. Assessing animal well-being on a regular basis will help detect changes in the environment that could negatively affect the pigs.



INTERNAL SITE ASSESSMENTS

At a minimum, a record demonstrating all animals on the site have been observed at least once a day should be kept. These records need to be kept for 12 months or as long as the farm has been operating if less than one year. Documenting daily observations can be as simple as posting a calendar, paper or poster inside the door of the facility or room where the caretaker can initial and date the document daily.

Internal site assessments or audits of the facility, animals, caretakers, and procedures must be conducted by the production management team including supervisors, site managers, or other internal animal welfare auditors. These internal site assessments or audits must be conducted at least quarterly on sow farms and semiannually on nursery and finishing farms.

It is suggested that the results of the internal assessment be reviewed with a PQA Plus advisor to develop and implement an action plan for identified problem areas. These internal assessments and documentation of corrective actions made should be kept for three years and will be reviewed by a PQA Plus advisor during the next PQA Plus Site Assessment.

PQA PLUS SITE ASSESSMENTS

A PQA Plus Site Assessment must be conducted and PQA Plus Site Status achieved at least once every three years. New production facilities should achieve PQA Plus site status within six months of operation or before animals are marketed from the site.

A PQA Plus advisor is an individual who has been trained to perform assessments objectively and



knows how to address problem areas found during the assessment. Caretakers who work with the herd on a daily basis may become less aware of slight changes in the environment that could affect the well-being of the pigs. Having a second set of eyes observe the farm can be useful in detecting these changes. Additionally, a PQA Plus advisor is a useful resource for learning about new equipment, production practices and research that can affect the well-being of the animals.

ACTION PLAN IMPLEMENTATION AND DEVELOPMENT

The final step of conducting a site assessment is to develop and implement a corrective action plan for any area that needs improvement. A corrective action plan documents what actions have been or will be taken to correct the issue(s) identified during the assessment. This final step helps to demonstrate the industry's commitment to continuous improvement to industry partners, customers and the general public.

Some issues, such as written euthanasia plans or poor air quality, may be corrected relatively quickly. In such cases, the corrective action plan should document how the issue was corrected. Other areas, such as inadequate medication and treatment records or low body condition of pigs, may require extra capital or time to correct. In these cases, the corrective action plan should document a detailed description of the plan to correct the issue and a timeline for expected implementation. Training or retraining of caretakers may also be part of the corrective action plan in efforts to correct the issue or prevent it from occurring again in the future. A PQA Plus advisor can be a useful resource when developing and implementing the action plan. They can provide ideas or advice on how an issue may be corrected or recommend consulting with other experts.

DAILY OBSERVATION

Conduct and document daily observations and provide care to pigs in need.

Daily observation and prompt delivery of care are critical in addressing individual animal health and detecting facility or management issues that need to be addressed. In addition, daily pig observation helps to assess the effectiveness of health and nutrition

programs, the suitability of facilities and the quality of stockmanship. In the event that a caretaker sees signs of sickness that could be the result of a Foreign Animal Disease, it should be reported immediately to a supervisor or veterinarian.

When performing daily observations, caretakers should evaluate the animals, environment and equipment. Daily observations should include:

- Animals' eating and drinking habits, sleeping patterns and signs of sickness or injury.
- The environment at the pig and barn level to make sure temperatures and air quality are correct for the phase of production.
- Evaluate fans, flooring, penning, feeders, waterers, and other equipment to make sure they are working properly.
- Record daily total mortalities that occur on the farm.

The best way to fully assess the pigs' environment and health is to walk inside the pens daily. Be sure to follow good biosecurity procedures when walking the pens. Recording such information as water intake or high and low temperatures within the barn can be a useful management tool. For example, a decrease in water intake can be an early indicator of illness in the herd. Large differences in high and low temperatures can be an indicator that the ventilation system is not functioning properly. Recording animal, facility or management concerns as the caretaker walks through the facilities will also promote corrective actions. Talk with a PQA Plus advisor or a veterinarian about the advantages of tracking daily observations of the animals for the farm.

DOCUMENTATION OF DAILY OBSERVATION

At a minimum, a record demonstrating all animals on the site have been observed at least once a day should be kept. These records need to be kept for 12 months or as long as the farm has been operating if less than one year.

Documenting daily observations can be as simple as posting a calendar, paper or poster inside the door of the facility or room where the caretaker can initial and date the document daily.



PROPER ANIMAL CARE AND EVALUATION

Another key element to good animal well-being is properly caring for the pigs. This includes closely evaluating animals, monitoring body condition, providing adequate space allowance and realizing when and how to perform euthanasia. Animal evaluation will help verify that the other aspects of the well-being program have been successfully extended to the animals themselves. Skin lesions, particularly abscesses, deep wounds, tail biting and shoulder sores, can be indirect indicators of how the animals are interacting and coping with their environment. In the event that a caretaker suspects that skin lesions or lameness is the result of a Foreign Animal Disease, it should be reported immediately to a supervisor or veterinarian.

SWINE BEHAVIOR

Swine behavior will be reflective of the quality of the care received and suitability of the facilities. Swine that are repeatedly exposed to unpleasant handling and abuse will show evidence of fear in the presence of humans. Pigs that have repeated exposure to pleasant handling are relaxed around people and generally will be easier to move. Watching how the animals react to caretakers or someone else can give an important indication of how they are being handled. Pigs are naturally inquisitive. However,

they also are cautious. Normally, a pig may initially act fearful or excitable as a protective reaction but then relax and maybe even explore the caretaker's presence by nosing or biting at legs or feet. The pigs' reaction is also affected by recent vaccinations, blood collection for herd, individual diagnostics, etc.

PRODUCTION PERFORMANCE

The production performance of the pigs in the herd often can be an indicator of their well-being. Some production performance measures that can be tracked include average daily gain, feed efficiency, farrowing rates and mortality rates. When calculating mortality rates, animals that die naturally and those euthanized should be included. A change in any one of these measures can be a potential indicator of a change in the well-being of the pigs. These indicators may depend upon genetics and nutrition, so it is important to benchmark these performance measures in the herd over time to better understand the typical performance of the herd as well as to allow caretakers to identify changes in the well-being of the herd.

BODY CONDITION

Animals should be fed to at least meet their minimum nutrient requirements for growth and maintenance of good body condition. Body condition scores are useful to assess the adequacy of the nutrition program and

TABLE AW.1 BODY CONDITION SCORING					
Score	1	2	3	4	5
Condition	Emaciated	Thin	Ideal	Fat	Obese
Detection of Ribs, Back Bone, "H" Bones and Pin Bones	Obvious	Easily detected with pressure	Barely felt with firm pressure	None	None

Taken from "Assessing Sow Body Condition" by R.D. Coffey, G.R. Parker, and K.M. Laurent (ASC-158; 1999")
 Body condition scoring has been adopted from the industry standard that is based on a 1 (emaciated) to 5 (obese) scale as shown in Table AW.1. Animals should be fed according to their body condition. ANY animal with a body condition score of less than 2 should receive immediate attention to improve their body condition. On animals with a body condition score of 1, the ribs and backbone of the pig will be easily visible. While emaciation (body condition score 1) is a potential indicator of a pig's well-being, an obese pig also has increased risks to its health. Obese pigs should have caloric intake decreased. Pigs that are either too thin or too fat could be an indication of a management need and a cause for discussion with a PQA Plus advisor.



the effectiveness of the heating and cooling strategies in the facility's management plan. There are multiple ways body condition scoring can be conducted on the farm: visually with a 1 to 5 scale (shown in AW.1) or a 1 to 3 scale, or with the use of calipers. The sow caliper technology is based on the premise that as a sow loses weight, fat and muscle her back becomes more angular. Studies relating the sow caliper to subsequent reproduction were used to develop recommendations for "ideal" sow body condition. Any animal that is non-ambulatory with a body condition score of 1 should be euthanized immediately.

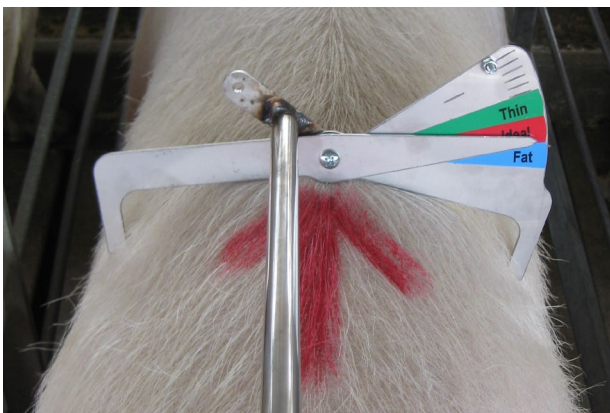


Photo courtesy of NC State University

Pay particular attention to sows 14 days before farrowing, as body condition at this time can be an indicator of how the sow might be able to handle the stresses of nursing. If needed, additional feed should be supplied after weaning to rebuild body condition. Pay close attention 14 days after weaning to assure that body condition is adequate or being corrected.

SPACE ALLOWANCE

For pig space to be considered adequate, the pig must be able to:

- Easily lie down fully on its side (full lateral recumbency) without having to lie on another pig and easily be able to stand back up.
- Lie down without the head having to rest on a raised feeder.
- Additionally, a pig housed in a stall must be able to lie down fully on its side (full lateral recumbency) without the head having to rest on a raised feeder and the rear quarters coming in contact with the back of the stall at the same time.

- For animals housed in individual stalls, the stall size must be appropriate for the physical size of the pig and cannot cause injury to the animal. Back-to-back, back to-udder, or udder-to-udder contact is appropriate if injury due to contact is not evident.

Group housing for pregnant sows is defined as a housing environment for more than one sow where, after confirmed pregnant, they have the ability to lie down and stand up unimpeded and to turn around.

The lactating sow and her litter should be evaluated as a unit. Split-suckling practices may be used in rooms with sows that are farrowing or have recently farrowed and are considered acceptable temporary housing for piglets. If all piglets can perform the criteria listed above without the split-suckling area, they are recorded as having adequate space.

The *Swine Care Handbook* gives recommended space allowances for pigs in total confinement, pigs in pens with outside concrete aprons and pigs on pasture. However, production practices, such as group size, ventilation equipment and rate, and type of floors (partial versus total slats), have an effect on proper stocking densities. Discuss with a PQA Plus advisor the stocking density that meets the needs of the animals given the specifics of the production facility and intended uses.

LAMENESS

There are several factors that can contribute to lameness including bacterial infections, heredity, foot and leg structure, injury or trauma, or nutrition. The severity of lameness can be scored using a 0 (no lameness) to 4 (severe lameness) scale as shown in Table AW.2. To detect lameness, ensure all animals are standing in order to observe their ability to bear weight. Pigs that are diagnosed as lame should be treated, culled, or humanely euthanized depending on the cause and degree of lameness. Severely lame pigs that do not show improvement after two days of treatment should be evaluated per existing euthanasia protocol.





SCORE	DESCRIPTION
0	Pig moves freely and uses all four limbs and feet evenly
1	Pig shows weight-shifting activities away from affected limb upon standing but shows little or no lameness or limping when walking
2	Pig obviously shifts weight away from affected limb when standing and shows limping or adaptive behavior when walking (head bob, arched back, caudal swagger, quickened step on affected limb, or shortened stride)
3	Pig is reluctant to stand and/or walk, shows obvious limp and adaptive behaviors when walking (head bob, arched back, caudal swagger, has quickened step on affected limb, or shortened stride)
4	Pig is non-weight bearing on the affected limb when either standing or walking

Lameness Score Scale adapted from Karriker et al., 2013 and Nalon et al., 2014.

ABSCESSSES

Abscesses are fluid-filled pockets in or under the skin that may cause the skin to be raised. They can be observed after a deep bruise, a penetrating injury or an injection. Note the number of animals observed with abscesses and if one location is more common than others.

DEEP WOUNDS

Deep wounds are defined as gashes, breaks or openings that completely penetrate the skin, such as bites or other lesions. Note the location of the deep wound to determine if one area is more common than others and work to identify the likely cause of the wounds. Note the number of animals observed with deep wounds. For piglets in the farrowing room, lesions associated with castration, ear notching, and tail docking are not included. Lesions associated

with tattooing or treatment at any time are not included. Shoulder sores are evaluated in a separate section, so are not included here.

SCRATCHES

Scratches are injuries to the skin that go into the skin but do not go all the way through. Animals with scratches that have scabbed over must be counted. The number of pigs with severe scratches must be noted.

SCORE	SCRATCHES CONDITION	DESCRIPTION
0	None / Minimal	Total scratches on <10% of body with no associated secondary adverse health conditions (including infection, necrosis, etc.)
1	Moderate	Total scratches on 10% - 25% of body with no associated secondary adverse health conditions (including infection, necrosis, etc.)
2	Severe	Total scratches on >25% of body with no associated secondary adverse health conditions (including infection, necrosis, etc.) -OR- Any scratch with associated secondary adverse health conditions (including infection, necrosis, etc.)

SHOULDER SORES

Shoulder sores are caused by pressure compressing the blood vessels supplying the skin and tissues covering the shoulder blade. This pressure interrupts the blood flow causing tissue damage and the formation of lesions. Sows that have a body

condition score less than 3, are older parity or are lame are more susceptible to developing shoulder sores. Abrasive flooring in farrowing and gestation housing can also have an impact on shoulder lesion development. Shoulder sores and lesions should be kept clean and treated according to veterinarian advice. Placing rubber mats in the farrowing and gestation stall has been shown to reduce shoulder sores and reduce healing time. Note the number of animals observed with shoulder sores that are open sores or scabbed over.

PROLAPSES

Prolapses are an eversion or the turning inside-out of the rectal lining, vagina, or uterus. Common causes are pigs coughing or piling to stay warm. Docking tails too close to the body or the pigs' genetics can also contribute to the occurrence of rectal prolapses. These animals should be identified and isolated or treated as quickly as possible to prevent further injury and to enhance the chance of full recovery. Prolapses that have not been addressed and have become necrotic are unacceptable, and these pigs should be euthanized. A veterinarian can help develop a treatment plan, but finding and addressing the contributing cause is also very important.

HERNIAS

Hernias are the protrusion of the intestines through the muscles of the abdomen or groin. Pigs with hernias that are perforated must be euthanized. Pigs with hernias that are ulcerated AND necrotic must be euthanized. Pigs with large hernias that touch the ground while standing and cause difficulty walking and are ulcerated must be euthanized.

TAIL BITING

Tail biting is a behavior that negatively impacts the well-being of the targeted pig. Tail biting can result in open wounds, bleeding, infection, and even death. Several factors can contribute to tail biting behavior, including nutritional deficiencies, inadequate access to feed and water, high ammonia concentrations, excessive noise, uncomfortable temperatures or overcrowding. When an outbreak of tail biting behavior occurs, it is important to identify and correct the root cause of the behavior, though this can be difficult to accomplish because of the multi-factorial causes of tail biting. Note and record evidence of tail

biting in the herd resulting in open wounds, bleeding, or infection of the tail. Injured animals should be treated, and the biter(s) should be identified if possible and housed separately.

VULVA INJURIES

Vulva injuries can result in open wounds, bleeding, and infection. Injuries to the vulva can occur from being stepped on or bitten by another pig. Note and record evidence of vulva injuries in the breeding herd resulting in open wounds, bleeding, or infection.



FEED AND WATER AVAILABILITY

Assess the facilities and equipment daily to make sure the pigs' environment is safe and allowing access to feed and water.

Animals must have access to feed and water according to the site's written SOP. All pigs must have free access to water at least once each day. Different feeding protocols may be used on different farms. Adequacy of these feeding protocols are evaluated through body condition scores.

Automated feed systems must be checked daily to prevent the occurrence of out-of-feed events. Bulk bins should be checked to make sure they have adequate feed supply and there is no bridging of feed. Feed lines and feeders should be checked daily to assure they are in good working order and that feed delivery is not blocked. Out-of-feed events can negatively impact the pigs' well-being by increasing aggression and decreasing average daily gain and average daily feed intake. Out-of-feed events can also increase the risk of developing stomach ulcers or hemorrhagic bowel syndrome.

Water is an important nutrient for normal body function, growth and reproduction. The quality and quantity of water a pig receives is important and



should be monitored regularly. Poor water quality can negatively impact the health of the pig and reduce consumption rates. Waterers should be designed so animals can drink freely and have flow rates that easily meet the pigs' water intake requirements. Specific information about appropriate water requirements per day and suggested flow rates can be found in Table AW.4. During very hot weather, water requirements may increase and the water system must have sufficient capacity to supply many pigs drinking at the same time.

TABLE AW.4 WATER REQUIREMENTS BY PHASE

PRODUCTION PHASE	WATER REQUIREMENT (GAL/PIG/DAY)	FLOW RATE (CUPS/MIN)
Nursery	0.7	1-2
Growing	2 to 3	2-4
Finishing	3 to 5	2-4
Gestating Sows	3 to 6	4
Lactating sows	2.5 to 7	4
Boars	5	4

Flow rate can be difficult to measure in wet/dry feeders, cup waterers or troughs. For wet/dry feeders and cup waterers, it is necessary to ensure the internal diameter of the supply line is large enough to allow sufficient water flow to accommodate the desired flow rate for all waterers if they were all to be used at the same time. It is also important to follow manufacturer recommendations for the water pressure necessary for each specific waterer design. Water troughs should be evaluated to make sure no obstacles or leaks are present in the troughs that would prevent any pig from having access to water.

TREATMENT PEN MANAGEMENT

Caretakers should have a plan for how an animal could be isolated from the rest of the herd for treatment or recovery when needed. Once a pig has been identified as ill or injured, it may need to be moved to a treatment area if its health and well-being are compromised by its fellow pen mates or if treatment of the animal is affected by remaining with

the group. Properly managed treatment pens can aid recovery and provide easier follow-up treatment. The treatment pen may be a temporary or permanent separate pen or enclosure, or an individual stall. An important consideration is providing adequate treatment and supportive care for the animal. This includes easy access to feed and water. Caretakers must have a method for tracking animals that are undergoing treatment, be able to demonstrate what treatments have been administered and how long that animal has been receiving the treatment, evaluate the effectiveness of the treatment and, if necessary, make good decisions about timely euthanasia. In the event that a caretaker sees signs of sickness that could be the result of a Foreign Animal Disease, it should be reported immediately to a supervisor or veterinarian. Clinical signs that could be the result of Foot and Mouth Disease infection include

- Fever
- Lameness
- Piglet death
- Depression and/or vesicles/blisters on the feet and/or snout

Signs that could be the result of Classical Swine Fever infection include

- Fever
- Red/crusty eyes
- Unsteadiness
- Huddling
- Diarrhea
- Skin discoloration and/or death

Signs that could be the result of African swine fever infection include

- Fever
- Piling
- Tiredness
- Diarrhea
- Skin discoloration
- Abortion
- Death

SERIOUSLY ILL, NON-AMBULATORY OR DEAD ANIMALS

When the trained caretaker's ability to evaluate an animal's condition is combined with daily observation, a caretaker will be able to more easily detect ill,



disadvantaged or dead animals. Pigs that are seriously ill, disadvantaged or dead, can give valuable information about the other animals' conditions. Dead animals should be removed from the living space upon identification. An animal should be considered non-ambulatory if it refuses to get up or if it can stand with support but refuses to bear weight on two of its legs. The farm should have a treatment or notification plan if animals with health conditions of concern are found. If a PQA Plus advisor notices animals needing treatment during a walk-through and they had not already been identified, review the training and observation programs.

EUTHANASIA

Euthanize pigs in a humane and timely manner.

Euthanasia is defined as humane death occurring with minimal pain or distress. Pigs that are not responding to care or are unlikely to recover must be euthanized humanely. The caretaker's past experiences with similar conditions should be used to make informed decisions about the likelihood of recovery. Timely euthanasia, as well as using the appropriate methods and equipment, is critical to the well-being of these pigs.

WRITTEN EUTHANASIA PLAN

Because every farm will at some time have sick or injured pigs that do not respond to care and treatment, it is important to have a written euthanasia action plan. Sites must have a written euthanasia plan covering primary and secondary methods for each stage of pig production on the farm and it should be readily accessible to all caretakers in the facility. The written plan must comply with the current American Association of Swine Veterinarians (AASV) guidelines for euthanasia. On farm euthanasia should be conducted according to the site's euthanasia plan. Table AW.5 is a summary and additional information and guidance on these euthanasia methods can be found in the AASV and American Veterinary Medical Association euthanasia guidelines.

The *On-Farm Euthanasia of Swine* brochure provides information to help producers choose the appropriate method to use on the farm by considering the following:

- Human Safety – The method must not put caretakers or others at unnecessary risk.

- Pig Well-Being – The method should minimize pain or distress on the animal.
- Practical and Technical Skill Requirements – The method should be easily learned and repeatable with the same expected outcome.
- Caretaker Compliance – Caretakers and others must be comfortable with, and willing to perform, the chosen method when needed. Lack of compliance compromises the well-being of the pig.
- Aesthetics – The method should not be objectionable to the person administering the procedure. Public perception of the method and its application also may be a consideration.
- Limitations – Some methods are only suitable for certain sizes of pigs or certain locations. The availability of equipment in good working order and carcass disposal options also can be limiting factors for choosing a method.
- Biosecurity Risk – Some methods require supplies or equipment be brought into the facility that may pose a biosecurity risk.

TABLE AW.5 EUTHANASIA METHODS APPROPRIATE TO PIGS OF DIFFERENT SIZES (WEIGHTS)³

METHOD	APPROVED FOR
Carbon dioxide (CO ₂)	All ages but may not be practical for pigs over 70 lbs
Gunshot	Nursery pigs or older
Penetrating captive bolt	Pigs greater than 12 lbs
Electrocution, head-to-heart	Pigs over three days of age
Veterinarian-administered anesthetic overdose	All ages but may not be practical
Manual blunt force trauma	Pigs up to 12 lbs
*Refer to page 4 of AASV 2016 <i>On-Farm Euthanasia of Swine: Recommendations for the Producer</i> to determine appropriate force and weight range combinations	



TIMELY EUTHANASIA

Animals must be euthanized in a timely manner. This means administering euthanasia when the following characteristics are exhibited:

- Animals that have no prospect for improvement or are not responding to care and treatment after two days of intensive care should be humanely euthanized unless otherwise recommended by a veterinarian. The caretaker's past experiences with similar conditions should be used to make informed decisions about the likelihood of recovery.
- Severely injured or non-ambulatory pigs with the inability to recover should be euthanized immediately.
 - » An animal is to be considered nonambulatory if it cannot get up or if it can stand with support, but is unable to bear weight on two of its legs.
- Any animal that is non-ambulatory with a body condition score of 1 must be euthanized immediately.
- Pigs with hernias that are perforated must be euthanized. Pigs with hernias that are ulcerated AND necrotic must be euthanized. Pigs with large hernias that touch the ground when standing and cause difficulty walking and are perforated must be euthanized.
- Any pig with an untreated prolapse that has become necrotic must be euthanized. Uterine prolapses must be euthanized immediately. Note that treatment may include removal from the group.

Events that call for timely euthanasia can happen any day of the week. Caretakers trained in euthanasia should always be available to respond – including nights, weekends and holidays. Animals must be handled humanely during the euthanasia process. If animals are not euthanized in place, suitable equipment should be available to move non-ambulatory animals so they can be humanely euthanized. Caretakers must confirm animals insensible and dead after the euthanasia method is applied and before being removed from the facility.

FUNCTIONAL EUTHANASIA EQUIPMENT

Any equipment used for pig euthanasia must be kept in proper repair and must be functional. Caretakers trained to conduct euthanasia must have access to this equipment. While others may also have access to euthanasia equipment, only those caretakers who are trained should use equipment to conduct euthanasia. A maintenance record can help demonstrate the condition of the equipment.

FACILITIES MANAGEMENT

Assess the facilities and equipment daily to make sure the pigs' environment is safe and allowing access to feed and water.

Another key factor in achieving good swine well-being is the maintenance of the facility and equipment. This includes examining the ventilation, animal facilities and emergency support plans and procedures.

VENTILATION

Both air temperature control and air quality can impact the well-being of the pigs in the operation. These two factors can be controlled through proper ventilation management. Housing systems must provide conditions that are conducive to good health, growth and performance at all stages of the pig's life.

THERMAL COMFORT/AIR TEMPERATURE

Provisions for heating and cooling should be present and in working order during extremes in weather. Pigs perform thermoregulatory behaviors in an effort to regulate their body temperature.

Pigs should not show thermoregulatory behaviors that indicate they are too hot or too cold, and the air temperature at the pig level should be in the preferred temperature range for the phase of production. If the air temperature is outside the preferred temperature range for the phase of production and pigs are displaying thermoregulatory behaviors, the caretaker must take appropriate actions to minimize heat or cold stress (Figure AW.1).

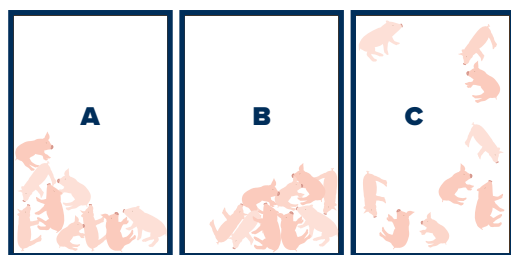


FIGURE AW.1: THERMOREGULATORY LAYING POSTURES OF SWINE

The images in Figure AW.1 portray the normal thermoregulatory laying postures of pigs in an environment with three different air temperatures. Take note of the pigs in relation to each other, as well as the amount of free space within the pen.

Image A depicts a pen of 9 pigs in an environment with ideal air temperature. These pigs have body contact with each other but do not pile excessively.

Image B depicts a pen of 9 pigs in an environment with cold air temperature. These pigs huddle very close together in a dense pile in one area of the pen. **Image C** depicts a pen of 9 pigs in an environment with hot air temperature. These pigs spread out throughout the pen and avoid physical contact with other pigs in the pen.



Taken from Shao et al., 1997, in volume 40 of the Transactions of the American Society of Agricultural Engineers.

Table AW.6 gives the critical limits and preferred temperature ranges for pigs in various stages of production. Upper and lower critical temperatures define the Thermal Comfort Zone or the range of temperatures that the pig does not have to use heat-conserving or heat-dissipating mechanisms (such as shivering, huddling or panting). Keeping pigs above or below their critical temperature cannot only negatively influence thermal comfort, but also feed intake, growth, feed efficiency and health. The thermal perception of the caretaker may be very different than that of the pig. Remember that air temperature measurements should be recorded at pig height (approximately one foot above the ground). Temperatures should be taken in the building center at one-third intervals down the length of the barn. Avoid taking temperatures near inlets and direct heat sources.

TABLE AW.6 THERMAL LIMITS FOR SWINE

PRODUCTION PHASE	LOWER CRITICAL LIMIT ¹	UPPER CRITICAL LIMIT ²	PREFERRED RANGE (°F)
Lactating Sow and Litter	50°F for sow	90°F for sow	60-80 sows; 90-95 piglets
Pre-nursery, 10-30lbs	60°F	95°F	80-90
Nursery, 30-75lbs	40°F	95°F	65-80
Growing, 75-150lbs	25°F	95°F	60-75
Finishing, 150lbs-Market	5°F	95°F	50-75
Gestating sows	5°F	90°F	60-75
Boars	5°F	90°F	60-75

Table adapted from NRC (1981): Chapter 2; DeShazer and Overhults (1982): Chapters 1 and 2; Hahn (1985): Chapters 1 and 2

¹ Bedding, supplemental heat or other environmental modification is recommended when air temperatures approach the lower critical limit.

² Except for brief periods above these air temperatures, some form of cooling should be provided when temperatures approach upper critical limits.

Regardless of whether pigs are kept indoors or outdoors, it may be necessary to provide supplemental heating or cooling when temperatures are outside the pigs' critical temperature limits. Examples of supplemental heating include using heat lamps or brooders for zone heating, gas or electric heaters or bedding. Examples of supplemental cooling can include misters, evaporative cooling cells, fans, shelters, shade trees or wallows. Producers should work with a PQA Plus advisor to determine which supplemental heating or cooling method is best for the site's housing design.





AIR QUALITY

Air quality can be controlled with a ventilation system that is in working order and that can operate without interruption. This is true whether the ventilation system uses the natural flow of air or mechanical assistance. There are several contaminants, such as dust and various gases, which contribute to the quality of the air within the pigs' environment. Some air contaminants, at high concentrations, can irritate the respiratory tract of the pigs and may leave them susceptible to disease while others can be lethal when concentrations are too high. Ammonia is a common air contaminant that can directly impact pig well-being and time weighted average concentrations should not exceed 25ppm. Physical signs consistent with exposure to poor air quality include watery and mattery eyes and difficulty breathing. If these physical signs are present in an air space, appropriate actions should be taken which may include actual ammonia measurements using dosimeter tubes, air meters or litmus papers. Samples should be taken at pig height (approximately one foot above the floor) and in the room center at one-third intervals down the length of the barn. Avoid taking samples near inlets and direct heat sources. In addition, adjust your ventilation management.

EMERGENCY SUPPORT

Be prepared for emergencies related to animal well-being.

Providing good animal care means being prepared for times of emergency, too. There are three important components of emergency support: the emergency action plan, emergency detection system and the emergency backup ventilation system. Additional information on the emergency action plan can be found in the Our People chapter.

EMERGENCY ACTION PLAN

In case of an emergency, quick communication is important. The site should have an emergency action plan that covers likely emergencies or catastrophes for that area and should be readily available to all employees. At a minimum, the plan must include telephone numbers for the owner, veterinarian, utility company, fire and police, and the address of the facility. Emergency contact numbers and the site address must be posted. All caretakers should be familiar with emergency procedures for the site and the emergency action plan. Refer to the Our People chapter for more information on developing an emergency action plan.

EMERGENCY DETECTION SYSTEM

Suitable alarm systems should warn of power failures or temperature changes as needed, but judgment is necessary to assess the adequacy of the emergency detection system taking into account the site of the facility. For example, if a barn is sited next to a caretaker's house and shares the same power line, visual detection of a power outage or other emergency is possible. Otherwise, some method of alarm – notification to a person or an automatic intervention – must be available as appropriate if the mechanical system fails. Regardless of the detection system, there should be some redundancy in the system so that emergency conditions are detected even if the detection system fails.

EMERGENCY BACKUP VENTILATION SYSTEM

Facilities must have intervention procedures or equipment to prevent death of animals in the event of mechanical ventilation failure. Intervention procedures can be manual or automated and will be dependent upon ventilation type. For example, a back-up generator, automatic or manual drop curtains, or some provision for natural ventilation may be appropriate depending upon the building's ventilation type. Testing this emergency backup system allows producers to identify problems and perform maintenance updates to the system. Keeping a record of an established schedule for testing and maintenance demonstrates the emergency backup system is operational. The emergency backup equipment should be tested at least twice a year.



ANIMAL FACILITIES

The state of repair of the facilities can directly impact the well-being of the pigs. Facilities are defined as barn structural components – penning, feeders, waterers, floors, chutes, and alleyways.

PENNING, FLOORING AND ALLEYWAYS

The condition of the pens, floors and alleyways can affect other indicators of a pig's well-being. Penning, floors, and alleyways should be appropriate for the phase of production, be in a good state of repair and not cause or pose an imminent threat of injury to the animal. For example, sharp protruding objects could affect the number and type of skin lesions found on the pigs. Pens with broken slats can contribute to lameness or other leg injuries. For indoor facilities, floors for all phases of production should be rough enough to minimize slips and falls, but not so rough as to injure the pad of the hoof. Non-slip flooring to provide good footing is essential in areas such as loading ramps, scales, restraint chutes or breeding pens where animals are handled. If more than one percent of the animals fall during handling, there is a problem that needs to be corrected. Falling is defined as when a pig loses an upright position suddenly in which a part of the body other than the limbs touches the ground.

Housing should be designed to allow for good drainage so that pigs have access to a clean, dry area to lie down if they choose. If bedding is used, it must be dry enough not to transfer mud or manure onto the body of the animal. Deep mud or muck with no dry place to lay is unacceptable.

FEEDERS

There are a wide variety of feeders and feeding equipment available today. Feeders should be in a good state of repair to allow for unobstructed feed delivery and not cause injury to pigs. Whatever type used on the farm, the number of feeding spaces and their size should allow pigs to consume their daily ration without unnecessary fighting and competition. Adequate space is especially important in the period immediately after weaning because newly weaned pigs tend to eat at the same time. Therefore, it is important to have feed readily available and easy to access. Additional information can be found in the *Swine Care Handbook*.

WATERERS

Several types of waterer designs are available for use in pork production. Whatever type is used on the farm, waterers should be in a good state of repair to allow for unobstructed water delivery and not cause injury to the pigs. Waterers should be designed and positioned so animals can drink freely and have flow rates that easily meet the pigs' water intake requirements. Enough waterers should be available within a pen to decrease competition for the resource. Specific information about appropriate water requirements per day and suggested flow rates can be found in Table AW.4.

ANIMAL HANDLING

Using best pig-handling and movement practices will contribute to good well-being of the pig and a safer work environment for the handler. When pigs are improperly handled, they become distressed, which can lead to several negative consequences such as physical injury to the pig, injury to the handler, decreased sow reproductive performance, increases in the incidence of non-ambulatory pigs, increased time to load and unload pigs and reduced growth rates. Additionally, improper handling also significantly contributes to carcass shrink, trim loss and poor meat quality. Improper handling and transport of pigs is one of the largest profit-reducing issues facing the pork industry today.

BASIC PIG BEHAVIOR

Handle pigs with knowledge of pig behavior.

Understanding basic pig behavior and body language will help contribute to a safe and positive experience for both the pigs and the handlers. A significant portion of a pig's behavior can be attributed to natural instinct and is further impacted by the age, gender, genetics, health status, environment and previous experiences of the pig. Calm pigs are easier to handle than excited, agitated pigs. Handling will be easier and pigs will be less likely to become agitated and bunch together if handlers use basic behavioral principles. An important part of effectively using pig behavior during handling procedures is learning how the pig perceives and responds to the handler in different situations and environments. There are three basic characteristics of the individual pig to consider:



- Flight Zone
- Point of Balance
- Senses – sight, hearing and smell

FLIGHT ZONE

The flight zone is the area around an animal that it considers its individual space. Pigs try to maintain a safe distance between themselves and their handlers. That safe distance varies among pigs, from moment to moment for each pig, and with even minor changes in handler behavior and body language. A pig's flight zone may decrease in size with frequent, positive human interaction. The more threatening the handler, the greater the distance pigs want to keep from them. When a handler gets too close or too threatening, pigs get scared or defensive and their body language and behavior change. Handlers need to recognize cues that pigs are getting scared and release their pressure to let pigs calm down and stay responsive.

POINT OF BALANCE

The pig uses its point of balance to determine which way to move away from the handler as long as the pig has space to move away and the handler allows it to move away. Typically, the point of balance is located at a pig's shoulder, but this may change depending on the environment. There are many conditions where the point of balance will not accurately predict how a pig will respond. There are situations where best results are achieved by working ahead of pigs and letting them circle past, for example, as they move out a gate. A common error handlers may make is attempting to move the pig forward while standing in front of the pig and tapping it on the rear or pressuring it to move forward. Additionally, handlers should not move, block or interfere from a forward position when another handler is attempting to move pigs past them. Pigs may balk and refuse to move if they are driven toward visible people.²⁰

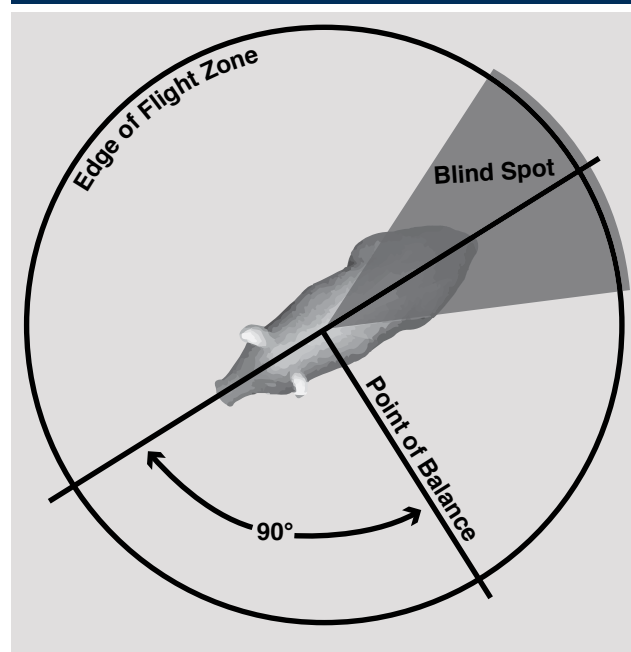
SENSES

A pig relies on their sense of hearing and smell to situate itself in its surroundings and uses sight to complement information gathered by these two senses. The blind spot exists because a pig's eyes are on the sides of its head.¹³ A pig's field of vision is approximately 310 degrees, leaving the blind spot directly behind it.³⁰ Pigs want to see anything that is a potential threat or source of pressure. They try to keep

handlers out of their blind spots. Pigs hold still and use their hearing to track people they can't see. Handlers have to notice what pigs are paying attention to in order to move them effectively. A pig's sense of touch also plays an important role during handling.

Figure AW.2 shows the flight zone, point of balance and blind spot of an individual pig.²⁰ This diagram illustrates a very specific set of conditions that are not always commonly found in barns or transport trailers. When pigs are moving up a loading ramp, the point of balance will be at the shoulder, but the flight zone should still be observed so the pig is not crowded and can get release from handler pressure.

FIGURE AW.2 FLIGHT ZONE, BLIND SPOT AND POINT OF BALANCE



Handlers inside barns and trailers typically work in conditions that are very different from those specified in the diagram. These conditions may include:

- Handling groups instead of individual pigs
- Absence of a chute to prevent pigs from turning around
- Confined spaces, such as pens and alleyways, that require handlers to work inside pigs' flight zones and that limit pigs' ability to move away from them
- Multiple people involved during the loading and unloading of pigs

Changing any of these conditions changes how pigs respond to the handler. When working with groups of pigs, in confined spaces or with additional people present, the pig's ability to move away from the handler is restricted. Under these conditions, handlers can no longer depend on the point of balance and automatically assume that pigs will move away from this pressure to their flight zone. Instead, handlers must understand how pigs' behavior is influenced by:

- Fear levels
- Herd behavior
- Presence of additional people
- Handlers' use of pig handling tools
- Environmental influences

Each factor influences pig behavior independently and in combination with the others.

PIG BODY LANGUAGE

Pigs show what they are paying attention to with their body language, heads, eyes and ears. Specifically, handlers should note where pigs are looking, how they are bending or twisting their bodies, how pigs have their heads and ears turned or cocked and whether pigs are listening intently. Pigs track their handlers more closely as the handlers become more threatening, the pigs become more stressed, or as the space they are worked in becomes more confined. In confined spaces or when pigs are stressed, a handler's pressure tends to hold pigs' attention rather than drive pigs away. Pig body language changes as they go from calm to highly excited. A good animal handler can read this body language and adjust their actions accordingly.

Releasing pressure refers to any action that reduces the level of threat we pose to pig behavior. It often involves giving pigs more time and space. Some ways to release pressure are to:

- Pause and let pigs move away.
- Step back and refrain from making physical contact with pigs.
- Soften handler body language to reduce the threat and the distance pigs require.
- Let pigs circle past (the strongest pressure is in the direction the handler is facing).

- Discontinue making noise.
- Look away from the pig.
- Reduce group size. This is dependent on several factors such as pig size, aisle, door or chute width and environmental influences.

Pigs communicate their level of fear with their heads, eyes, ears, vocalization, and body movements. Table AW.7 describes the disposition of pigs and their responses.

HERD BEHAVIOR AND GROUP PATTERNS

Pigs try to stay with other pigs for protection. Anytime a group of pigs is observed, a herd behavior can be identified. The manner in which pigs display herd behavior is closely linked to their fear levels, what they are paying attention to and the available space. When moving pigs, handlers should encourage flowing herd behavior and minimize bunching herd behavior.

FLOWING HERD BEHAVIOR

Flowing movement occurs when pigs move with the group when the group is moving. This flowing movement occurs when:

- There is a calm pig response.
- Pigs are drawn to the movement of other pigs.
- Pigs' attention is on moving and staying with the herd.
- Movement of front animals draws other pigs to join and follow.
- Movement of animals coming from behind drives front animals to continue moving forward.
- Animals are loosely spaced and not touching each other.
- The handler is moving with and not forcing the flow. Pigs are being given time and space to clear obstructions, corners, etc. and move out of their space before the handler moves into it.
- Pigs feel safe shifting their attention away from the handler to follow the herd.

If the lead animals are given enough time to move through the transition, other pigs will follow. When handlers anticipate problems and increase noise, pressure and crowding to try to scare and force animals through transitions, they cause the balking and piling they hope to avoid.



TABLE AW.7 DISPOSITION OF PIGS AND THEIR RESPONSE³⁴

PIG DISPOSITION	PIG RESPONSE
<p>Calm Pigs that are calm are able to stay a safe distance from handler and get release from handler's pressure.</p>	<ul style="list-style-type: none"> • Hold head and ears low, body relaxed • Move at a walk or trot, or exuberant outbursts if excited but not scared • Attention not strongly focused on the handler • May have low-pitched vocalizations
<p>Mild Fear Or Defensiveness Pigs show mild fear of defensiveness because the handler is getting too close or not giving enough release from pressure.</p>	<ul style="list-style-type: none"> • Have raised heads and ears • Move away but with increasing attention towards the handler • Have an expanded flight zone • Possible brief increase in speed • Will calm down if pressure is released • Will become more fearful or defensive if pressure is maintained or increased
<p>Heightened Fear or Defensiveness Pigs show heightened fear or defensiveness because the handler is too close or using too much pressure where animal is unable to get release.</p>	<ul style="list-style-type: none"> • Full attention is on the handler • Stops, backs up, turns back or tries to get past handler because its efforts to move away aren't working • Shuts down and refuse to move <ul style="list-style-type: none"> » This is a defensive response different from being too tame or fatigued. • Strong tendency to circle or bunch up and difficult to sort, separate, or control • Will calm down after some time if pressure is released • Will escalate to extreme fear if pressure is maintained or increased • High-pitched vocalization
<p>Extreme Fear or Defensiveness Pigs show extreme fear or defensiveness when they are unable to get release from the handler.</p>	<ul style="list-style-type: none"> • Panic • Willing to run under, over or through handlers and obstacles • Scrambles and shows out of control movement • Refusal to move • Vocalizations are high pitched • Very strong circling or bunching up and difficult to sort, separate, or control • Show severe stress symptoms which may lead to death

DISRUPTING FLOW

Movement and distractions ahead or to the side of the pigs can catch their attention and stop flow. Excessive handler noise, pressure and crowding from behind will also stop movement. Pigs may slow or stop flow when they encounter something new or unfamiliar such as changes in:

- Floor surface (e.g., transition from concrete alley to wooden chute).
- Footing or traction (e.g., wet, slippery chutes or loose cleats).
- Temperature (e.g., moving from a warm building to an outdoor chute or ramp on a cold day).
- Lighting (e.g., pigs move best from dark areas to lighter areas, not from light to dark).¹⁹



Other things that may be unfamiliar or distracting and cause pig flow to slow or stop include:

- People in their path or peripheral vision area.
- Drafts or wind. Pigs may refuse to walk into a draft that blows into their face.
- Shadows.
- A beam of light shining through a crack or opening.
- Equipment, trash or other objects in their path or hanging on gating (e.g., feed cart in alley).
- Loud or sudden noises and activity where they can hear but not see the source.
- Water puddles or drain grates.
- Shiny or reflective objects or surfaces.
- Change in color of equipment or gates.
- Change in height of flooring, a step up into a pen or chute.
- Moving or flapping objects.
- Doorways that may change the width of the alley.
- Other animals (e.g., pigs, dogs, cats).

Items on this list tend to cause problems for some handlers, but not for others. Handlers who read their pigs, keep them calm, and give them time and space to flow tend to experience fewer difficulties. Take the time to minimize distractions in the environment before moving pigs and pay attention to what pigs are saying. Signs of increasing fear indicate the handler needs to release pressure so pigs can settle down and continue flowing.

Most handlers have experienced frustration while unloading because someone outside the trailer is receiving, counting, auditing, tattooing, or moving other pigs, etc. and blocking pigs from moving off the trailer. When pigs are being loaded onto a trailer, the transporter is the receiver.

Transporters need to be aware of their position when pigs are headed their way. If they are standing in the pig's view, have hands and tools in sight, are moving around or reaching in, or making noise, the pigs may actually stop moving. The most helpful thing a transporter can do to speed up loading is to stay still, stay quiet and stay out of sight until the last pig in the group has passed.

It is important that only one person pressures pigs at any time.

When someone is behind a group of pigs driving them forward, movement or pressure from someone in front of the pigs could encourage the pigs to stop and turn back. Pigs have to be moving to get to the trailer, and the best tool is to let that flow keep moving them into the trailer. Any noise or activity from the handler may:

- Draw attention and stop pigs that have already gone past.
- Block pigs that are approaching so they stop moving or stop driving the front pigs forward.
- Cause forceful handling from an annoyed handler, leading to more problems and longer load time.

Pigs try to keep track of all people. Observers and people not actively involved with moving pigs can also draw pigs' attention and stop movement. The fewer people present, the simpler it is for pigs to keep moving and the easier it is for the people moving them.



Handlers' position and bubble delivering pigs to the ramp.



Handlers' position and bubble delivering pigs away from the ramp.

Photos courtesy of DNL Farms LTD.



BUNCHING HERD BEHAVIOR

Bunching herd behavior occurs when pigs stay still and stay with the group when the group is stopped.

Bunching:

- Is a defensive response.
- Not only stops movement but discourages pigs from resuming movement which may be useful for ear tagging and vaccinating.
- Is encouraged by anything that stops, crowds, traps, scares, or confuses pigs.
- Often occurs when pigs are facing away from the handler, closely packed and listening intently.

An early warning of bunching is seeing the heads and ears rising along with increased crowding within the group. Pigs will often stay in a bunch rather than leave the bunch to get away from the handler. Increasing pressure and aggressiveness toward pigs that are bunching encourages tighter bunching. One of the main priorities when moving pigs is to avoid this bunching behavior. Pigs require release of pressure to come out of a bunch or pressure ahead to turn them out of a bunch.

HANDLER'S BUBBLE

The safe distance pigs try to maintain between themselves and a handler can be referred to as either a flight zone around the pig or as a bubble around the handler. The bubble:

- Takes up “real” space and contributes to crowding.
- Expands and contracts with the handler’s pressure and pigs’ fear levels.
- Acts as a “real” barrier that moves with the handler.

Pigs tend to move along the arc of the bubble. By watching where the bubble is taking pigs, handlers can adjust their positions so their bubble takes pigs where they want them to move. In crowded conditions, such as when starting movement out of rear compartments, smaller pigs will tend to pile away to get out of the bubble then turn back to circle. Larger animals such as market pigs and breeding stock are more likely to hold still within the bubble. With larger animals, start the animals that are facing the right direction and use their movement to pull others.³⁴

CIRCLING

Pigs circle their handlers to get release from pressure. This is a defensive response. Circling is a valuable tool when used intentionally in conjunction with the handler’s bubble to sort pigs, start movement, speed up movement, shift pigs’ attention from the handler to herd flow, move pigs past barriers, and funnel movement to prevent stopping and bunching at gates.

PEOPLE-PIG INTERACTIONS

It is important to understand the potential effects that human interactions have on

pigs and pig behavior.²⁴ A person’s intentions are not always understood by the pig and this may create fear or a negative reaction to a handler. Additionally, pigs that have had regular, positive interactions with people will typically be less fearful and easier to handle. Slowly walking pens on a daily basis will help pigs become used to positive interactions with people. This will train the pigs to quietly get up and calmly move away from the handler.⁸ Pigs can recall previous experiences, and if they have had a bad handling experience in the past, they may be more difficult to handle the next time.²¹ This previous experience may relate specifically to a human interaction or it may relate to a piece of equipment such as a loading chute used for handling and transportation.

Handlers should act calmly and avoid sudden movement, loud noises and other actions that may frighten or excite pigs. This includes shouting or creating excessive noise with other handlers when working as a team to move pigs. Pigs should be moved at their normal walking pace. Aggressive handling should be avoided as it can lead to injured or stressed pigs. Aggressive handling includes things such as:

- Over, or improper use, of electric prods.
- Loud noises and yelling.
- Moving pigs too fast.
- Moving too many pigs per group.
- Overcrowding pigs in chutes, ramps, and alleyways.
- Rough physical contact, such as forcefully striking an animal with the corner of a sort board.



HANDLING PIGS OF VARIOUS TYPES AND SIZES

Handle pigs according to their size and phase of production, using proper handling equipment.

Basic handling protocols apply to nearly all pigs, but requirements for certain sizes and types of pigs differ and specific techniques may need to be used. Animals should be handled appropriately for their age. Regardless of the size of pig being handled, workplace safety and animal well-being should be top of mind. To prevent injury, be aware of and anticipate animal movements and pay attention to animal location. Know when and where hands, knees and feet could be injured. Avoid placing arms and hands between the animal and equipment. Set up gates and alleys according to the farm protocols. Always have an escape route to quickly get out of the area and be aware of the location of coworkers so as not to direct the pigs toward them.



HANDLING BREEDING STOCK

Breeding stock (sows, gilts and boars) are the largest and most powerful pigs a handler will work with and handlers should use extra caution when moving these animals. A sort board should be used when moving a large animal. The handler should not use his or her body alone. If the animal appears aggressive or agitated, it may be safer for the handler to move out of the way than to risk potential injury.

Breeding stock are the most unpredictable animals, especially boars. Boars are particularly unpredictable when exhibiting mating behaviors, such as when they are being used for estrus detection.

Sows can be aggressive as well, especially when they perceive their litter is being threatened (e.g. such as during piglet processing or weaning). In addition to their reproductive behaviors, pigs of breeding age

require extra caution just because of their sheer body mass. Therefore, it is important for these pigs to be familiar with positive human interactions.

Groups of breeding stock should be small enough so that the handler can maintain control of all pigs in the group so handling interventions can be applied to the pigs not moving. Electric prods should not be used to move sows or boars out of pens.

These large animals can also cause injury to people or pigs, through sudden movement of their heads or by pinning the handler between the pig and a fixed object such as a gate or feeder. Often, this type of injury is a result of the handler's arm or leg being in the wrong place at the wrong time.

Boars are especially dangerous because their tusks can cause injury, so handlers should use extra caution and never turn their back to a boar.

HANDLING PIGLETS

Handling piglets can present a safety challenge to the handler. Piglets have sharp teeth and can bite the handler when they are picked up. The sow may also attempt to bite the handler when they reach into the stall to grab a piglet.

Groups of piglets can either be moved by herding or by picking them up and moving them by hand or with a cart. Piglets should be picked up by holding them under their rib cage, over the back, or by grabbing a rear leg, above the hock, and then gently setting the piglets into a cart, alleyway, or pen. Before releasing a pig to the ground, the pig should have at least two points of contact – such as two front legs – before the handler lets go. Piglets may squirm and wiggle when picked up, so care should be used so that they are not dropped. Piglets should not be tossed, thrown or picked up by ears. When being held for an extended period, piglets should be held under the rib cage next to the handler's body or by both rear legs using two hands.

Pigs should be moved in groups large enough to be efficient for the production system, but small enough to be safe for the pigs and the handler(s). Electric prods should not be used on suckling or weaned piglets.

Piglets should not be tossed, thrown or picked up by ears.



HANDLING NURSERY AND FINISHING PIGS

Nursery pigs grow rapidly and quickly become too large to lift or hold safely, so they are moved by herding.

Do not drag or pull nursery or feeder pigs by the ears.

Nursery pigs should be moved in groups large enough to be efficient for the production system, but small enough to be safe for the pigs and the handler(s). Groups of finished pigs should be small enough so that the handler can apply handling interventions to the pigs not moving. Electric prods should not be used to move nursery or finisher pigs out of pens.

Do not drag or pull nursery or feeder pigs by the ears.

When moving nursery and finisher pigs, the primary tool needs to be the effective use of pigs' natural behavior and movement patterns. Working with these patterns makes it easier for pigs to leave their pens and keep moving. This reduces the incidence of aggressive or agitated pigs and the safety risk they pose to handlers and themselves. That said, when an animal does get excited, it may be safest for the handler to move out of the way to avoid potential injury and to let the pig calm down. Sometimes 20 to 30 minutes is required to allow pigs to calm down and become easier to move.

Nursery and finisher pigs are often moved out of full pens where restricted space encourages them to circle around the handler or stop and bunch, and through narrower gates that don't allow all animals to exit at once. Getting behind and chasing pigs towards the gate encourages them to stop, crowd and bunch at the gate or circle away from the gate. By working from a different position, pigs can be encouraged to circle toward the gate and prevent pigs from stopping and bunching.

When sorting and moving these pigs, it is often the best practice to work in pairs and have one person work the pen gate while the other sorts the pigs with a sort board. This is especially true when finished pigs are being sorted for load-out, as the first pigs may be reluctant to leave their pen mates. When emptying entire pens, work along the side of the pen on the inside of the arc the pigs are to follow, and use the handler's bubble to narrow the flow so pigs



keep moving when they arrive at the gate. The most effective position will be closer to the gate than many people feel comfortable with. If there is more than one handler, both should work alongside the pen instead of behind the pigs and with only one person applying pressure at any time. Always pay attention to where the handler's position and bubble are taking pigs and adjust as needed.

When sorting individual pigs from a pen, start from the gate and get as many selected pigs as possible to circle past the handler and out of the pen before going deeper. Once in the pen, it is important to give pigs release so they can move away from the handler. If a handler is working alone, pigs will stay calmer and easier to move and sort if space is given and the handler is not trying to corral or contain them until the gate must be opened. If multiple handlers are working together, it is important that only one person is active at any time. The handler at the gate can hold still while the other handler moves the pig forward. Alternately, the handler in the pen can hold still while the handler at the gate invites the chosen pig to circle out of the pen. Both handlers moving at the same time will drive the chosen pig away from the gate. Once pigs are moving beyond the pen, give them space and keep them calm to encourage flowing herd behavior and reduce the incidence of animals stopping or coming back toward the handler.

Handlers should rely on a sort board instead of their bodies to turn or stop large finishing pigs. A bifold panel is a particularly useful device as it creates a corralling effect, reduces an escape route for the pig and increases safety for the handler. If an animal appears aggressive or agitated, it may be safer for the handler to move out of the way than to risk a potential injury.



When working with larger pigs, it is important for the handler to move in the pen with their legs slightly bent. If standing in a pen with legs locked back, handlers are at greater risk for leg sprains and strains if a pig runs into a knee. Instead, standing with knees slightly bent with a sort board offers a buffer for knees if a pig makes contact with the sort board and legs.

SUGGESTED GROUP SIZES

Pigs should be moved in groups large enough to be efficient for the production system, but small enough to be safe for the pigs and the handler(s). Group sizes can depend on facility design, temperament of the animals or weather conditions. The handler should always remember that using too much pressure or by crowding the rear pigs can stop the movement of the front pigs.

Groups of finished pigs and breeding stock should be small enough so that the handler can maintain control of all the pigs in the group so handling interventions can be applied to the pigs not moving. Breeding stock should be moved individually or in groups up to five pigs depending on temperament and safety conditions. Finished pigs should be moved in groups of three to five.

Research indicates reducing finish pig group size from eight to four pigs during loading significantly decreases the amount of time to load the trailer and the percentage of dead and non-ambulatory pigs at the farm and the slaughter plant (Berry, N. et al, 2009).^{7,23}

Group size should be appropriate for the smallest point in the path of movement. Try different sizes in particular spaces until finding the number that yields calm consistent movement. Smaller herd groups stay at a steady pace and ultimately leads to a faster load time. Getting this number correct protects the pig and the handler.

TABLE AW.8 SUGGESTED GROUP SIZE BY PIG TYPE

PIG TYPE / SIZE	SUGGESTED GROUP SIZE
Weaned piglets	20
Nursery pigs	20
Finished/Market Pigs	3-5
Sows/Gilts	1-5*
Boars	1-5*
*Depending upon temperament and safety conditions, may require moving individually.	

NON-AMBULATORY PIGS

Non-ambulatory pigs are a challenge that a caretaker may face at some point. A pig that cannot get up or walk on its own is called non-ambulatory. A pig may become non-ambulatory due to injury, illness or fatigue. Determining the specific cause will help handlers identify the appropriate way to care for the pig.

Medical treatment may be an option for a pig that is non-ambulatory due to injury or illness. When the likelihood of recovery is high, the pig should be moved to a pen where competition for feed and water is reduced and where the pig can be monitored and treated regularly. When pigs become non-ambulatory due to illness or injury and the likelihood of recovery is low, even with treatment, the pig should be humanely euthanized.

There are strict guidelines in place for how ill, injured and fatigued pigs should be humanely handled when moving them for treatment, rest, or recovery. Handling methods for moving ill, injured, and fatigued pigs should include equipment appropriate for the size, age and condition of the animal. When pigs become too large to be carried in a safe manner, proper tools for moving these animals should be used. Efforts should be taken to not exacerbate and/or cause an injury to the animal.

From worker safety and animal handling perspectives, it is recommended that a minimum of two individuals handle ill, injured, or fatigued pigs.

In the case of pigs becoming non-ambulatory due to fatigue, quietly and humanely move the pig to a pen and allow it to recover before attempting to move it



again. Pigs can be moved out of the alleyway and into a recovery pen using a plastic sled or a drag mat. Most pigs will fully recover after two to three hours of rest. Fatigued pigs can be recognized by open-mouth breathing, vocalization (squealing), blotchy skin, stiffness and muscle tremors. The best way to prevent the occurrence of fatigued pigs is to minimize stress by utilizing good animal handling practices.

Should an ill, injured or fatigued pig become non-ambulatory, it is strictly prohibited to move pigs on top of non-ambulatory pigs. Non-ambulatory or dead pigs must be protected or moved out of the way first. It is also strictly prohibited for handlers to drag live animals or force them to move. This is based on federal regulation.

At no time is it acceptable to throw cold water on an animal that has collapsed from over exertion. If used, water should be applied as a sprinkle. It is also not acceptable to drop a live pig to the ground from a transport door or other elevated surfaces. Live pigs should also not be drug by their ears, legs or tail; and the handler's foot should not be used in any way to move the pig.

The position of the National Pork Board is that any pig that is unable to walk, significantly injured or is ill and will not recover should be humanely euthanized on the farm and not transported through market channels.

TRANSPORTATION AND EQUIPMENT

Handle pigs according to their size and phase of production, using proper handling equipment.

Transportation involves factors that could be perceived as stressful to a pig such as unfamiliar noises and vibrations, rounding corners, changes in speed (acceleration/deceleration) and potential temperature extremes. Handlers and transporters should implement procedures that make transportation as safe and humane as possible. Before loading a truck, it should be correctly prepared for its journey by determining loading density, proper setup for weather conditions and scheduling of transport.

HANDLING EQUIPMENT

Animal handling equipment that aids in sorting and moving pigs in a safe, humane and efficient manner should be available to be used during animal handling. Handling equipment is effective by providing barriers or stimuli including:

- Physical barrier (i.e. sort board)
- Visual barrier (i.e. matador's cape)
- Auditory stimulus (i.e. rattle or shaker paddle or shaker can)
- Visual stimulus (i.e. nylon flag)

Most of these tools are effective for a specific situation and should not be used for others. For example, a plastic rattle or shaker paddle may be effective for moving weaned piglets from the farrowing room to the nursery but is not a tool to use when moving a boar to his pen after estrus detection. Animal handling equipment should be in good working order and not broken or have any sharp edges. Pipes, sharp or pointed objects or other items that would cause injury or unnecessary pain to the animal should not be used when moving pigs.

A common mistake is to ignore pigs' flight zones when using handling tools. If a handler is close enough to touch a pig with their hand or other tools, they are likely in its flight zone and close enough to risk stopping movement. Hand held tools are only helpful when used in combination with the pigs' natural behavior and response patterns. All tools require effective handler positioning and allow for pigs to get release from pressure. Minimal and thoughtful use of tools generates the most positive results. If pigs are moving, leave them alone, don't touch them, just follow along and let them move.

Using an electric prod to move a pig is stressful and should not be used as a primary tool for animal movement. It should only be used as a last resort.³²

- Numerous research studies have shown increased use of an electric prod increases stress in pigs, so use of electric prods should be avoided



or minimized. If a pig is moving in the desired direction, there is no need to use the prod.

- Never prod a pig in sensitive areas such as eyes, ears, nose, genitals or rectum.
- If regular use of an electric prod is needed, evaluate the handling procedures and facilities.

If it is necessary to use a prod, it should be applied to the back of the pig behind the shoulder, and the duration of the shock should not exceed one second. The pig should be allowed five seconds to respond before another shock is given. No more than 25 percent of animals should receive an electric shock. If a single pig is prodded more than once, it is only counted as one animal. Prods should not be used more than twice on animals that refuse to move. Excessive prod use is considered a willful act of abuse. Electric prods should not be used when moving pigs from the pen.

Understanding pig behavior, including flight zone, point of balance, herding instinct and using proper handling techniques can ease handling and decrease stress. Failure to properly handle pigs is a common cause of human injury within a production facility. Proper use of handling equipment (i.e. minimizing electric prod use, increasing use of sort board) can facilitate handling and reduce injuries to both pigs and handlers. These details should be the focus of caretaker training.^{25,31}

WEATHER CONDITIONS

Pigs do not have a thick coat of hair nor do they have the ability to sweat, making them sensitive to heat and cold stress. While temperature is not always the primary cause for pigs becoming non-ambulatory or dying during transport, it can be a factor. Trailers should be appropriately equipped for weather conditions during transport. Protocols should comply with with TQA that accommodate variation depending on weather. Table AW.9 provides recommended truck setup procedures for transporting finisher pigs. Too much bedding can be harmful to the pig in warm temperatures.

TABLE AW.9 RECOMMENDED TRUCK SETUP PROCEDURES BASED ON AIR TEMPERATURES (FINISHER PIGS)		
ESTIMATED AIR TEMPERATURE	BEDDING* (RECOMMENDED BAGS/TRAILER)	SIDE-SLATS (% CLOSED)
<11° F	Heavy (6 bags)	90-95
11 - 20° F	Heavy (4-6 bags)	75-90
21 - 30° F	Heavy (4-6 bags)	50-75
31 - 40° F	Medium (3-4 bags)	50-75
41 - 50° F	Medium (3-4 bags)	25-50
51 - 60° F	Medium (3-4 bags)	0-25
61 - 89° F	Medium (3-4 bags)	0
> 90° F	Light (1-2 bags)	0

*Bedding refers to a 50 pound bale of wood shavings
Adapted from Xiong, Y., et al., 2013 and McGlone, J., et al., 2014.⁶⁰

LOADING DENSITY

Overcrowding pigs on a trailer is preventable. Loading density in the trailer should be observed for overcrowding. Signs of overcrowding may include piling, excessive squealing or panting. Gates should be able to close without having to force the pigs into the space. Once a gate is closed, watch to see if the pigs have room to stand without climbing on top of each other. Listen for pigs that are squealing due to being stepped on or crowded.

If overcrowding is suspected, reduce the number of head per trailer compartment. Pigs in overcrowded conditions will quickly overheat and begin panting, open-mouth breathing and may become injured, fatigued or even die.



Optimal loading density is dependent upon temperature, trailer design, compartment size, etc. Changes in loading density need to be made to accommodate the weight of the pig or weather conditions. The need for these changes may outweigh transport costs and number of pigs left in the barn on a given day for the benefit of the animal's well-being. Research has shown that increasing loading density also increases transport losses.

WILLFUL ACTS OF ABUSE AND NEGLECT

Willful acts of neglect or abuse are unacceptable and are not tolerated.

These acts are not in line with the We Care® Ethical Principles to which pork producers are committed.

Willful acts of abuse are defined as acts outside of normally accepted production practices that intentionally cause pain and suffering including, but not limited to¹⁸:

- Intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, genitals or rectum.
- Malicious hitting or beating of an animal. This includes forcefully striking an animal with closed fist, foot, handling equipment (sort board, rattle paddle, etc.) or other hard or solid objects that can cause pain, bruising or injury.
- Deliberate slamming of gates on animals
- Excessive prod use as defined in the handling equipment section found later in this chapter.
- Driving pigs off high ledges, platforms or steps while moving, loading or unloading, causing pigs to fall to the ground.
- Dragging conscious animals by any part of their body, except in the rare case in which a non-ambulatory animal must be moved from a life-threatening situation. Non-ambulatory pigs may be moved by using a drag mat.
- Purposefully dropping or throwing animals.
- Causing physical damage to the snout or tusks of a boar as a means to reduce aggression. This excludes nose ringing and tusk trimming.
- Failure to provide food, water and care that results in significant harm or death to animals.

- Malicious driving of ambulatory animals on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport).

ANIMAL CARE AND ABUSE POLICY

Implement a zero-tolerance policy for animal abuse.

There are currently no national laws or regulations that dictate animal production conditions on the farm. However, most local or state governments have laws that address animal cruelty. Producers should familiarize themselves regarding such laws in their locations. The *Swine Care Handbook* and the *Federation of Animal Science Societies' Ag Guide* define accepted animal care practices.

All caretakers should be familiar with what are considered willful acts of abuse and know there is zero tolerance for neglect or willful acts of abuse on the farm. Caretakers should be aware of the policy, understand how to report abuse and neglect and understand the disciplinary steps that are associated with abuse and neglect.

REPORTING ANIMAL ABUSE

If a willful act of abuse is observed, immediately intervene to stop the situation if reasonably and safely possible. The incident should be reported to the site representative, farm owner or management. Every farm should have a reporting mechanism in place for caretakers to report abuse and neglect. All reports should be thoroughly investigated. The National Pork Board strongly encourages anyone with knowledge of possible animal abuse or neglect to report these actions immediately to the proper responsible persons.



The National Pork Board endorses adherence to the See it? Stop it! initiative and its principles. See It? Stop It! enforces the perspective that willful acts of abuse are unacceptable and will not be tolerated. See it? Stop it! empowers anyone working on a farm or in a farm setting where animals are being raised or transported to immediately report any instances of animal abuse or neglect.



PUBLIC HEALTH

United States pork producers promise to ENSURE PRACTICES TO PROTECT PUBLIC HEALTH.





PUBLIC HEALTH

United States pork producers promise to ENSURE PRACTICES TO PROTECT PUBLIC HEALTH.

PUBLIC HEALTH RECORDKEEPING

Antibiotics

Veterinarian-Client-Patient Relationship Form

Individual Treatment Record

Pen/Individual Treatment Record

Medicated Feed Mixing Records

Company Sick Leave Policy

Secure Pork Supply

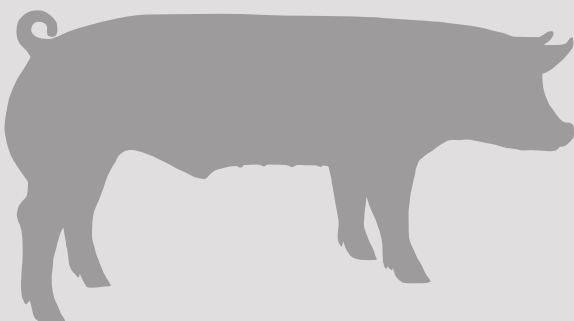


GPP

PUBLIC HEALTH GOOD PRODUCTION PRACTICES

Protect swine and public health

Use antibiotics responsibly



Numerous safeguards are in place to ensure pork is safe for everyone. Research, government oversight and national training programs are focused on protecting public health by ensuring pork producers use management practices consistent with producing safe food, manage the use of animal health products, and manage manure and air quality.

This chapter will take a close look at the following topics:

1. Antibiotics
2. Zoonotic Diseases – Influenza

ANTIBIOTICS

The basis for using antibiotics responsibly during pork production involves evaluating their use to protect animal health, protect effectiveness and minimize the risk of developing antibiotic resistance, thereby protecting public health.

Pork producers use antibiotics for three purposes: treatment of illness, control or prevention of disease and to improve the nutritional efficiency of animals so they need less feed to get to market. The National Pork Board has developed specific principles and guidelines to guide pork producers in responsibly using antibiotics.

- **Treatment of Illness** – Treatment of an ill animal or group of animals, when the diagnosis of disease or infection has been made. Antibiotics administered for treatment are delivered by injection, in feed or in water.
- **Control of Disease** – Treatment of a group of animals after the diagnosis of clinical disease in part of the group, with the aim of treating the clinically sick animals and controlling the spread of disease to animals in close contact and at risk which may already be (subclinically) infected.
- **Prevention of Disease** – Treatment of an animal or a group of animals before clinical signs of disease, in order to prevent the occurrence of disease or infection. Preventive treatment is applied to animals diagnosed at high risk of bacterial disease for the period in which the threat exists and is based on epidemiology and clinical knowledge.
- **Improve Feed Efficiency** – Certain classes of not medically important (NMI) antibiotics can be administered to enhance the efficiency of pigs in converting feed to muscle.

PRINCIPLES FOR RESPONSIBLE ANTIBIOTIC USE

Use antibiotics responsibly. The National Pork Board has developed five principles to guide producers in using antibiotics responsibly. It is the producer's responsibility to take action in implementing these principles in order to ensure both swine and public health.

Principle 1: Manage herd health to decrease the need for the application of antibiotics.

Principle 2: Assess the advantages and disadvantages of all uses of antibiotics.

Principle 3: Use antibiotics only when they provide measurable benefits.

Principle 4: Fully implement the management practices described for responsible use of animal health products into daily operations.

Principle 5: Have a working veterinarian-client-patient relationship (VCPR) and follow the responsible antibiotic use guidelines.

PRINCIPLE 1: TAKE APPROPRIATE STEPS TO DECREASE THE NEED FOR THE APPLICATION OF ANTIBIOTICS.

Preventive strategies, such as implementing biosecurity programs, appropriate animal husbandry including proper ventilation and nutrition, hygiene, routine health monitoring and vaccination programs, can help decrease the need for antibiotics. A comprehensive herd health plan as described in the Food Safety chapter is the key to maintaining animal health and productivity. This will minimize the need for antibiotics and should include talking with a veterinarian about the health status of the herd, how it can be improved and how it can be protected.



Antibiotic treatment may not always be the most effective strategy. Consider management options that could be as, or more, effective than antibiotics. Medication should not always be the first option in addressing a health problem. Other management options should be considered prior to, or concurrent with, utilizing antibiotic therapy.

PRINCIPLE 2: ASSESS THE ADVANTAGES AND DISADVANTAGES OF ALL USES OF ANTIBIOTICS.

Producers should consider the advantages and disadvantages of all uses of antibiotics, including animal health, welfare, environmental, food safety and economic impact. Consideration should include the potential for development of resistant bacteria that may impact animal and human health. Furthermore, responsible antibiotic use helps build consumer trust in the swine industry. Producers should consult a veterinarian to create proper antibiotic use protocols to maximize the advantages and minimize any disadvantages of antibiotic use.

- Antibiotic use should be minimized by treating only for as long as needed for the desired clinical response.
 - » Antibiotic use involves both dose (amount and frequency) and duration (length of treatment).
 - » Label instructions and veterinary consultation provides valuable guidance on the optimum dose and duration of treatment.
 - » Extra-label use of an antibiotic must be by, or on the order of, a veterinarian within the context of a VCPR and as outlined in the Animal Medicinal Drug Use Clarification Act described in the Food Safety chapter. It is illegal for a producer or a veterinarian to deviate from the label when using antibiotics in the feed.
 - » Administration of antibiotics in chronic, nonresponsive cases may not be effective.
- Periodically assess the need for continuing preventative antibiotic therapy.
 - » Formally review any regimen that includes antibiotics on a regular basis with a veterinarian. Assess if there are other management changes to make to reduce the need for antibiotics. Antibiotic use should not become routine.

PRINCIPLE 3: USE ANTIBIOTICS ONLY WHEN THEY PROVIDE MEASURABLE BENEFITS.

The Food and Drug Administration (FDA) approves products based on their safety (human, animal and environmental) and efficacy. The agency considers the risk to public health from antibiotic resistant bacteria. The FDA does not consider economic benefit in the approval decision. Producers have to assess potential economic benefits for the farm when deciding on product use.

- Reduced mortality, morbidity and improved animal welfare are measurable benefits that can result from the appropriate treatment, control and prevention of disease.
- Producers may have the option of supplying markets that require certain restrictions for antibiotics based on marketing decisions. Consider pig welfare, management implications and economic impact of adopting those specified production practices when choosing whether or not to participate in that market.



Evaluate these benefits specifically for the farm to ensure there are measurable benefits from using antibiotics. Base the assessment of the measurable benefits of antibiotic use for nutritional efficiency on scientific data. Data published in scientific journals, university publications and clinical trials are examples of science-based data that could help in making the decision about using antibiotics to enhance nutritional efficiency. Properly designed on-farm trials can also provide reliable data. Work with a veterinarian or nutritional advisor to help design scientifically valid on-farm trials. Improperly designed trials will not provide reliable information that can be used to make decisions. If the herd health or management changes, reevaluate antibiotic regimens to determine if there is still a measurable benefit. Review them regularly with a veterinarian and nutritionist.



**PRINCIPLE 4:
FULLY IMPLEMENT THE MANAGEMENT
PRACTICES DESCRIBED FOR RESPONSIBLE
USE OF ANIMAL HEALTH PRODUCTS INTO
DAILY FARM OPERATIONS.**



PQA Plus is recognized as the industry's commitment to the production of safe and wholesome pork. The implementation of the PQA Plus Good Production Practices (GPPs) is an important step toward using antibiotics responsibly. Implementation of GPPs helps ensure that preventative management practices are implemented to reduce the need to use antibiotics and that antibiotics are used responsibly on the farm to protect animal health, food safety and public health.

- Keep written records of all medication uses as described in the recordkeeping section of the Food Safety chapter. Written records are essential for verifying that antibiotics are being used wisely. In this instance, the job isn't done until it is written down. Protect producers, public health, the swine industry and the confidence consumers and government agencies have in the producer's ability to produce a safe product by keeping a written record of every antibiotic use on the farm.

In addition to implementing GPPs, producers must follow the rules set out by the federal FDA and the state veterinary and pharmacy boards for drugs requiring a veterinary prescription or veterinary feed directive (VFD).⁵¹ For additional information regarding prescription medications and VFDs, refer to the Food Safety chapter.

For additional information regarding written medication records, analyzing treatment records, calculating withdrawal times, and animal identification, refer to the Food Safety chapter.

**PRINCIPLE 5:
HAVE A WORKING VETERINARIAN-CLIENT-
PATIENT RELATIONSHIP (VCPR) AND
FOLLOW THE RESPONSIBLE ANTIBIOTIC
USE GUIDELINES.**

The National Pork Board has developed the following six guidelines to help producers, in consultation with a veterinarian, use antibiotics responsibly.

**GUIDELINES FOR RESPONSIBLE
ANTIBIOTIC USE**

The National Pork Board has developed the following six guidelines to help producers, in consultation with a veterinarian, use antibiotics responsibly

**GUIDELINE 1: USE PROFESSIONAL VETERINARY
INPUT AS THE BASIS FOR ALL ANTIBIOTIC
DECISION-MAKING.**

- As described in the Food Safety chapter, the responsible use of antibiotics should meet all requirements of a VCPR.
- Even though it is legal to obtain and use some veterinary antibiotics over-the-counter (OTC), pork producers must protect animal health, public health and consumer confidence through responsible antibiotic use. As of June 11, 2023 all medically important antibiotics are now only available via a VFD or prescription from a veterinarian. Non-medically important antibiotics are those not used to treat human illnesses. These products may be available for use for growth promotion. It is important to always consult your herd veterinarian before using antibiotics for any purpose.



- It is important to work with your veterinarian every time antibiotics are needed., any change to its labeled directions – dosage, interval, condition being treated, age or class or animal treated, etc. – can only occur under the direction of a veterinarian.
 - » Only available under prescription under VFD.
 - » Before a drug is used in a manner not in accordance with the approved drug labeling, a veterinarian MUST be involved. Work with a veterinarian to make sure that all extra-label drug use meets the requirements of the Animal Medicinal Drug Usage Clarification Act (AMDUCA) regulation.⁴⁸

GUIDELINE 2: ANTIBIOTICS SHOULD BE USED FOR PREVENTION, CONTROL OR TREATMENT ONLY WHEN THERE IS AN APPROPRIATE CLINICAL DIAGNOSIS OR HERD HISTORY TO JUSTIFY THEIR USE.

- Diagnosis is supported by clinical signs, necropsy, laboratory tests, herd history, etc.
 - » An accurate diagnosis includes identification of factors contributing to the cause of the disease.
 - » Culture and sensitivity results can aid in the selection of antibiotics.
- Insist on an accurate diagnosis, including culture and sensitivity results when appropriate.
 - » This will save money by saving time in treatment and by establishing a pattern of bacterial susceptibility on the farm.
 - » Look for other management factors such as ventilation, pig flow, etc. that may be contributing to disease.

GUIDELINE 3: LIMIT ANTIBIOTIC USE FOR PREVENTION, CONTROL OR TREATMENT TO ILL OR AT-RISK ANIMALS, TREATING THE FEWEST ANIMALS INDICATED.

- Consider group morbidity and mortality rates when deciding whether or not to initiate herd, group or individual therapy.
 - » Consider the herd health history when selecting antibiotics.
- There are times when administering antibiotics

to prevent disease will ultimately mean less antibiotics will be used than if treating the same group of animals following an outbreak.

- » Responsible use of antibiotics during treatment includes administering antibiotics only when necessary, to the smallest number of animals feasible and for the least amount of time necessary to prevent reoccurrence of the disease.

GUIDELINE 4: ANTIBIOTICS THAT ARE IMPORTANT IN TREATING INFECTIONS IN HUMAN MEDICINE, OFTEN REFERRED TO AS MEDICALLY IMPORTANT ANTIBIOTICS, SHOULD BE USED IN ANIMALS ONLY AFTER CAREFUL REVIEW AND REASONABLE JUSTIFICATION.

- Culture and sensitivity results should be considered when selecting antibiotics used for treatment.
 - » Discuss product options with a veterinarian to select the most appropriate therapy for the specific situation.
 - » Ask a veterinarian which antibiotics are recommended for any disease condition on the farm and how they could impact antibiotic resistance on the farm and in human health.
 - » Work with a veterinarian to consider product choices and develop treatment protocols to minimize development of resistance or cross-resistance.
 - » Have a written action plan for antibiotic use, and review it regularly with a veterinarian.

GUIDELINE 5: MIXING TOGETHER INJECTABLE OR WATER MEDICATIONS, INCLUDING ANTIBIOTICS, BY PRODUCERS IS ILLEGAL.

- As an example, it is illegal to mix an antibiotic and iron together on the farm for use while processing piglets. The mixing of two drugs together in any vessel (i.e. bottle, syringe, stock solution bucket, etc.) is compounding.
 - » Compounding can only be performed by a licensed pharmacist or veterinarian.
 - » Because the interactions of the different components may lead to the formation of new compounds or cause destruction or precipitation of active or inactive ingredients, setting a withdrawal time may be difficult.



- » The use of compounded drugs may result in adverse reactions or death of animals.
- » Under AMDUCA, a veterinarian with a VCPR may be permitted to compound FDA-approved drugs following rules very much like those for extra label drug use. A veterinarian is then responsible for the safety, efficacy and withdrawal time of the compounded drug.
- » Compounding by producers or distributors of animal health products is prohibited.
- » More information about compounding drugs by veterinarians can be found in the food safety chapter.

GUIDELINE 6: MINIMIZE ENVIRONMENTAL EXPOSURE THROUGH PROPER HANDLING AND DISPOSAL OF ALL ANIMAL HEALTH PRODUCTS, INCLUDING ANTIBIOTICS.

- Water medicators and feeders need to be properly adjusted to deliver the desired dose and avoid spillage and waste.
- Additionally, ensure proper handling and disposal of any outdated or unused animal health products through communication and caretaker training. Do not dispose of medication into pits, drains or toilets. If you are unsure how to properly dispose of the medication, contact the manufacturer for instructions.
 - » For more information regarding medication disposal, refer to the Food Safety chapter.

For additional information on using antibiotics responsibly, refer to the following resources:

- AASV Basic Guidelines of Judicious Therapeutic Use of Antimicrobials in swine, 2023¹
- Food and Drug Administration Guidance for Industry #152: Evaluating the Safety of Antimicrobial New Animal Drugs with Regard to Their Microbiological Effects on Bacteria of Human Health Concern¹⁶
- Food and Drug Administration Guidance for Industry #209: The Judicious Use of Medically Important Antimicrobial Drugs in Food-Producing Animals¹⁵
- Food and Drug Administration Guidance for Industry #213: New Animal Drugs and New Animal Drug Combination Products Administered in or on Medicated Feed or Drinking Water of Food Producing Animals: Recommendations for Drug Sponsors for

Voluntarily Aligning Product Use Conditions with GFI #209FDA Veterinary Feed Directive¹⁰

- Animal Medicinal Drug Use Clarification Act⁴⁸
- Extra-label Drug Use Algorithm for Veterinarians¹⁴
- As of June 11, 2023, GFI 263 states “When animal drug sponsors make the voluntary labeling changes recommended in GFI #263, medically important antimicrobial drugs that are currently available over the counter (OTC) would then require a veterinarian’s prescription (Rx).⁵⁰”

ANTIBIOTIC RECORDS

Keeping complete records pertaining to the administration of antibiotics allows producers to track disease incidence, treatment use and efficacy in swine barns. Collecting this information is crucial to assessing the need for change and/or improvement in a given system. Consider the following when tracking antibiotic use:

- Document every incidence of antibiotic use, especially for those antibiotics that are important for human health. These may include:
 - » Type of drug used and the method of administration (oral, topical, or injectable)
 - » Dose, duration, and indication for use
 - » Identification of animal(s) treated using with as much detail as possible
 - » Outcome of treatment (i.e., success/fail or survive/euthanize)
- If a prescription or VFD is required, make sure the appropriate form is filled out and is complete. Maintain these records according to federal regulations.
- Store records in a centralized location. This may require transferring written records to a database where details can be accessed and searched as needed.

Tables that can be used for antibiotic recordkeeping purposes can be found in the resources and form section of the handbook. These include:

- Veterinarian-Client-Patient Relationship Form
- Individual Treatment Record
- Pen/Individual Treatment Record
- Medicated Feed Mixing Record





ZOONOTIC DISEASES

Zoonotic diseases or zoonoses are those diseases that can be spread between people and animals.²⁷ These diseases span four main categories including viral, bacterial, fungal, and parasitic. They result from direct contact with animals (such as physical contact with the animal directly and/or their bodily fluids or environments), inhalation of infectious particles in the air, or through the consumption of contaminated meat and/or water.

The most common types of zoonotic diseases transmitted from pigs to people are influenza and gastrointestinal (GI) infections. It is important however to note that transmission of disease can also move from people to animals. Influenza is an example of a disease

that can be readily transmitted from pigs to caretakers and vice versa. Therefore, caretakers must take the appropriate steps to prevent disease in people and pigs.

DISEASE TRANSMISSION BETWEEN PEOPLE AND PIGS

Protect swine and public health.

There are two main modes of zoonotic disease transmission: direct and indirect. In direct transmission, diseases are transmitted through direct contact, such as touching or handling pigs. Such contact allows infected particles to be transmitted from an infected person or animal to a new host.

In indirect transmission, diseases can be transmitted without direct contact. Instead, infectious particles are transmitted through air, water, food, a contaminated environment or a bite from an infected bug such as a flea, tick or mosquito.

Examples of the different routes of infection, as well as the pathogens transmitted via each route, that can be seen in the swine industry are displayed in Table PH.2.

OVERVIEW OF DISEASE PREVENTION

Disease prevention strategies will depend on the type of infection (bacterial, viral, fungal or parasitic) and the route of infection (inhalation, ingestion, or direct contact). Basic practices one can employ when trying to prevent zoonotic disease in a herd, other caretakers, and oneself are as follows:

TABLE PH.2 ZOONOTIC PATHOGENS OF SWINE AND THEIR ROUTE OF TRANSMISSION

ROUTE OF TRANSMISSION (ROT)	EXAMPLE
Inhalation	Viral: Influenza
Fecal-Oral/Ingestion (via food or water)	Bacterial: Gastrointestinal pathogens (<i>E.coli</i> , <i>Salmonella</i> , <i>Campylobacter</i> , etc), Q Fever Parasitic: Gastrointestinal pathogens (<i>Giardia</i> , <i>Cryptosporidium</i> , etc), <i>Taenia solium</i> (<i>Cysticercosis</i>), <i>Trichinella</i>
Direct Contact	Bacterial: <i>Streptococcus suis</i> , <i>Brucella spp</i> , <i>Erysipelothrix rhusiopathiae</i> (Erysipelas), MRSA Fungal: Dermatophytes/Ringworm
Vector-Borne	Japanese Encephalitis Virus

- Contact the farm’s veterinarian if it’s suspected that pigs have a zoonotic disease and seek guidance on how best to prevent caretakers and other service professionals, as well as other pigs at the farm from contracting a given infection.
- Use the appropriate personal protective equipment when risks are present. For more information about personal protective equipment see the Our People chapter.
- Implement good biosecurity practices to prevent disease occurrence and/or spread among the pigs in the barn.
- If ill, seek medical attention immediately and stay home from work to prevent spreading the disease to other caretakers and/or back to swine. If the veterinarian has diagnosed the herd with a zoonotic disease, this information should be relayed to caretaker physicians since zoonotic diseases can move in both directions. More information on protocols that can be used to prevent disease introduction and/or spread within a barn as it relates to zoonotic diseases can be found in NASPHV’s Veterinary Standard Precautions Compendia. This document can be located from any search engine using the words “NAPHSV and standard precautions”.

DISEASE OCCURRENCE, OUTCOMES, AND RECORDKEEPING

Should a disease outbreak occur, accurate documentation helps keep pigs and caretakers safe and healthy. Documentation of disease occurrence and outcomes includes:

- Work with the farm’s veterinarian to document every incidence of infectious disease onset in pigs. Be sure to include the clinical signs observed, (i.e. cough, diarrhea, nasal discharge) name of the pathogen and the date of onset or first identification in the herd, noting if a given disease is zoonotic in your records. In the case of zoonotic diseases, note when staff are informed of the characteristics of the disease in humans (i.e., pathogen name/type, rate of transmission, signs, and symptoms) and note the number of pigs infected.
- Track disease treatments and outcomes as it relates to antibiotic use.

- Store records in a centralized location. This may require transferring written records to a database where details can be accessed and searched as needed.

Tables and checklists that can be used for zoonotic disease recordkeeping, can be found in the resources and forms section of the handbook. These include:

- Pen/Individual Treatment Record

A Biosecurity Checklist can be located within the Secure Pork Supply site.

INFLUENZA

Of all the zoonotic diseases that can be transmitted between pigs and their caretakers, influenza is by far the most common condition and of the greatest priority in the industry. The first step to prevention for any of these infections is being aware of the risk.

TYPES OF INFLUENZA

There are four types of influenza viruses: A, B, C and D. Type B and C viruses are only found in people; however, type A viruses can infect birds and mammals, including pigs and people. Influenza A viruses often contain genetic materials that have been picked up from flu viruses infecting birds, pigs and people. This is because influenza A viruses are able to mix together to create new viral strains, and therefore, are constantly changing. Pigs can be infected with human, swine and avian origin influenza A viruses.

While rare, influenza A viruses can spread from pigs to people or from people to pigs. Transmission usually requires close contact between pigs and people. In susceptible pig herds, the influenza A virus can cause high fever, lethargy and respiratory symptoms such as coughing and sneezing. Most influenza A viruses in pigs are different from the influenza A viruses that infect people and typically stay in pigs.

BIOSECURITY PLAN FOR INFLUENZA

Pigs and their caretakers are in close contact on a daily basis. Implementing good biosecurity protocols protects both the pig and the caretaker. Influenza viruses have circulated in humans and animals for centuries. These viruses have become very adaptive and are able to mix with other influenza viruses to create new viral strains. Most influenza viruses circulating in pigs stay in pigs, and most influenza viruses circulating



in people stay in people. However, occasionally influenza viruses can move from people to pigs or from pigs to people. Following good biosecurity practices will help protect pig and caretaker health. Visit the Secure Pork Supply website for resources on creating a biosecurity plan.

ON-FARM BIOSECURITY PRACTICES

Limit the number of visitors to the farm.

- Prevent unauthorized visitors entering the farm.
- Limit the entry of caretakers and essential service personnel.

Develop and implement an enhanced biosecurity protocol for caretakers, service personnel and all other people and equipment entering the farm.

- Do not allow anyone exhibiting influenza-like illness to enter the farm and ask visitors to report recent contact with others who have signs of illness.
- Implement a shower-in/shower-out policy.
- Require the use of farm-specific clothing and footwear.
- Encourage everyone to wash their hands and arms frequently with soap and water while on-farm, including before and after handling pigs, before eating and smoking and before touching faces, mouths, eyes or noses.

Follow industry-accepted biosecurity practices.

- Require basic hygiene practices, understanding that people and animals can share germs.
 - » Wash hands with soap and water when leaving the barn.
 - » Keep food and drink out of animal areas.
- Properly adjust and maintain ventilation. Ventilation systems in production facilities should be designed to minimize re-circulation of air inside animal housing facilities. This is important to reduce the exposure of pigs to viruses from other pigs and to reduce their exposure to human influenza viruses.
- Prevent the introduction of birds into buildings, avoid contact with birds and bird droppings in general, and avoid use of non-chlorinated surface water.

» For farms that have both swine and poultry on-site, personnel should be dedicated to either swine or poultry barns, but not work with both species.

- Provide basic personal protective equipment to the caretakers in barns. For more information regarding personal protective equipment, refer to the Our People chapter or porkcheckoff.org/certification-tools/producer-tools/safe-pig-care/.
- Recommend that all caretakers be vaccinated yearly against the seasonal influenza virus.
- Review herd health programs with a veterinarian to ensure they are up-to-date and effective for conditions of the farm.

Establish, implement and enforce strict sick leave policies for caretakers who have developed influenza-like symptoms, such as a fever, cough, body aches, fatigue and sometimes vomiting and diarrhea.

- Prevent caretakers who are exhibiting these symptoms but do not have a formal diagnosis from entering swine facilities for at least seven days after beginning signs of influenza-like illness, even mild signs.
- Recommend that caretakers with influenza-like illness seek medical care.
- Caretakers should become familiar with the company sick-leave policy.
- Restrict caretakers diagnosed with influenza from entering swine facilities until they are fever-free for at least 24 hours without the use of fever-reducing medication.
- Caretakers should communicate with their supervisor if feeling ill.

GOOD BIOSECURITY PRACTICES APPLIED TO INFLUENZA

There are a number of good biosecurity practices that can be applied to help stop the influenza virus from entering the herd. Producers can step up their on-farm biosecurity practices, and carefully monitor the health of the pigs. Caretakers should preform daily observations of all animals to assess the health of the animals both on the farm, and those transported to other sites or to market. Signs of influenza caretakers may observe include fever, lethargy, lack of appetite, nasal discharge or



coughing. If influenza is suspect in pigs, the farm's veterinarian should be contacted immediately.

If influenza does enter the herd, producers should work to minimize its spread. Consider the following as it relates to worker safety, swine health, and public health:

- Worker safety and health:
 - » Require the use of safety goggles, gloves and properly fitted N95 respirators by all caretakers working with animals that have signs of illness.
 - » Workers should use a designated set of clothing for the workplace to limit transmission.
- Swine health:
 - » Consult the farm's veterinarian to implement biosecurity practices tailored for the farm and swine health practices that will protect the herd.
 - » Follow the herd veterinarian's recommendations of treatment and isolation of the clinically affected or at-risk animals.
 - » Implement a program so caretakers in charge of animals developing illness do not have contact with other animals. If that is not possible, caretakers responsible for sick animals should work with the ill animals at the end of the day and shower and change clothing before working with animals that do not have signs of illness.
 - » Take steps to prevent the spread of the virus to other operations or unaffected groups of pigs.

Exhalation valves bypass the mask filtration system and will not protect those near the person wearing the respirator.

- Public health:
 - » Contact a medical care provider if anybody develops influenza-like illness as soon as possible as antiviral treatment is often started shortly after illness onset, ideally within 48 hours of symptom onset.
 - » Recommend that all caretakers be vaccinated against the seasonal influenza.
 - » Encourage caretakers to wash their hands and arms frequently with soap and water, including before and after handling pigs, before eating or smoking or before touching faces, mouths, eyes or noses.







OUR PEOPLE

United States pork producers promise to PROVIDE A
WORK ENVIRONMENT THAT IS SAFE WHERE EMPLOYEES
ARE TREATED FAIRLY AND WITH RESPECT.





OUR PEOPLE

United States pork producers promise to PROVIDE A WORK ENVIRONMENT THAT IS SAFE WHERE EMPLOYEES ARE TREATED FAIRLY AND WITH RESPECT.

OUR PEOPLE RECORDKEEPING

Emergency Action Plan



GPP

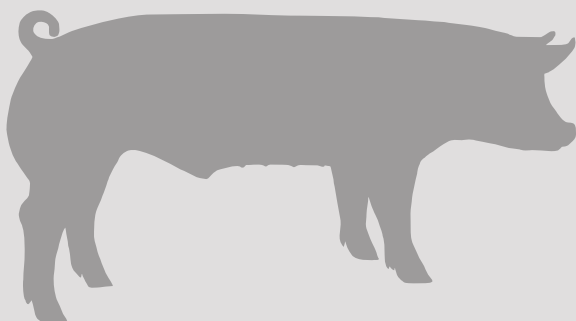
OUR PEOPLE GOOD PRODUCTION PRACTICES

Foster a workplace environment filled with fairness and respect

Take responsibility for workplace, personal and coworker safety

Be prepared for emergencies with an emergency action plan

Handle pigs safely using knowledge of pig behavior



Effective education and training of caretakers is key to earning the trust of consumers. Likewise, ensuring fairness and respect in the workplace is key to maintaining high job satisfaction among those who work in the pork industry. U.S. pork producers have reputable, national training and certification programs designed to bring the latest knowledge and practices to the farm. These programs include teaching U.S. pork producers how to provide and maintain a work environment that promotes the health and safety of caretakers.

This chapter will take a close look at the following topics:

1. Fairness and Respect in the Workplace
2. Safety and Health Hazards
3. Animal Handling and the Caretaker
4. Facility, Building and Machine Hazards
5. Emergency Action Plan

FAIRNESS AND RESPECT IN THE WORKPLACE

Foster a workplace environment filled with fairness and respect.

Engagement and job satisfaction are key factors to getting and maintaining quality caretakers. When cultivating workplace relationships, the Human Resource department needs to be facilitating opportunities to let information move up the chain, provide a voice to discuss program gaps to be corrected and foster shared ownership in the policies that shape the work environment. This includes taking responsibility for workplace, personal and coworker safety.

One way to do this is by developing a safety program that is implemented among all caretakers and managers and revised routinely to ensure it is efficient and up to date. A safety program is a set of activities or practices that is implemented with the goal of protecting the caretaker. This could include, but is not limited to, details regarding the records that need to be kept on equipment maintenance, guidelines on the type of personal protective equipment (PPE) caretakers need to wear for a given activity or to complete a task, training on how to use and remove PPE appropriately, providing access to the site's emergency action plan, and details on maintaining an injury log.

For a safety program to work, it must be everyone's responsibility - producers, management and caretakers. If any person fails to take personal responsibility for working in and maintaining a safe work area, that person puts him or herself and others at risk.

Prioritizing mental health in the workplace is crucial for fostering a positive and productive work environment. Employees' mental well-being directly impacts their

performance, creativity, and overall job satisfaction. Refer to company policies on mental health if you or a co-worker are facing mental health challenges.

Working in a swine facility can be demanding and stressful. Recognizing the potential impact of workplace stress on your mental health is crucial. If you are struggling, do not hesitate to seek help. Talk to a trusted friend, family member, or a mental health professional. Many facilities offer programs with access to counseling and support resources. Refer to your company policies or talk to your facility's human resource department if you or a co-worker are facing mental health challenges. Remember, prioritizing mental well-being is essential for your own health and the well-being of the animals in your care.

SAFETY RESPONSIBILITIES FOR CARETAKERS

Take responsibility for workplace, personal and coworker safety.

Know which jobs have high accident and injury risk.

- Understand and comply with workplace health and safety practices.
- Know what to do to reduce injury risk.
- Use safe animal handling practices.
- Use safe chemical handling practices.
- Participate in hazard identification and risk assessment activities.
- Properly use safety equipment, safety devices and personal protective equipment (PPE).
- Report unsafe acts and workplace hazards, accidents, near-accidents, injuries and illnesses immediately.



- Stop work being performed unsafely and correct the conditions before continuing the work.

SAFETY RESPONSIBILITIES FOR PRODUCERS AND MANAGEMENT

- Assign responsibility.
- Conduct safety assessments.
- Define the hazard risk for all routine and nonroutine tasks.
- Source and allocate resources to ensure safety in all operational activities.
- Measure progress and evaluate performance of safety and environmental management.
- Review all program components and make adjustments to correct deficiencies.
- Provide training pertinent for each employee based on hazard identification and risk assessment results.
- Review addition of any new processes, equipment or facility renovation/retrofitting for potential unforeseen hazards.
- Stop work being performed unsafely and correct the conditions before continuing the work.

SAFETY RESPONSIBILITIES FOR PRODUCERS

- Ensure appropriate resources are utilized to eliminate or reduce hazards.
- Ensure that production pressures do not alter or suspend proper safety procedures at any time.
- Encourage and support caretakers to reinforce the importance of their safe actions.
- Observe the work area to detect and correct potential problem areas.
- Initiate corrective action immediately.
- Stop work being performed unsafely and correct the conditions before continuing the work.
- Ensure all caretakers are trained in proper job procedures, including safety precautions.
- Actively and promptly investigate all reported incidents to determine the root cause of the incident.
- Ensure that each caretaker follows the instructions and guidelines.

SAFETY AND HEALTH HAZARDS

Pig production facilities can expose producers and caretakers to potential safety and health risks. Controlling exposures to hazards is the fundamental method of protecting caretakers. The basic strategies for controlling workplace hazards, in order of preference per OSHA guidelines, are as follows:

1. Eliminate the hazard from the method, material, facility or machine.
2. Substitute the material or process to a less hazardous option.
3. Reduce the hazard by limiting exposure or controlling it at its source.
4. Raise awareness of the hazard via training. Implement and reinforce safe work procedures to avoid it.
5. Use personal protective equipment (PPE) to protect against the hazard.

Note – PPE is not the most effective control.

PPE is the least desirable way to eliminate or reduce hazards and should be implemented only when those hazards can't be eliminated or reduced by engineering or administrative methods. Supervision and feedback on selection and use of PPE are needed.

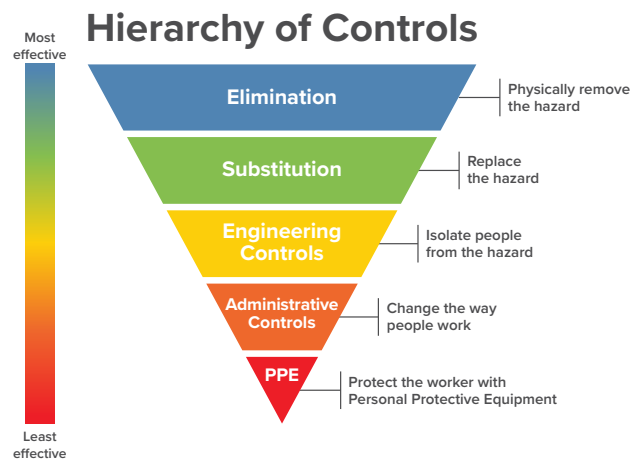


Image by NIOSH <https://www.cdc.gov/niosh/topics/hierarchy/default.html>⁵⁴

These five controls are crucial to a safe, healthful workplace because they make it more difficult for accidents to occur and for work-related health problems to develop. The following topics are examples of some hazards to which caretakers may

be exposed. Job safety analyses along with more detailed descriptions and control methods for the most common hazards found on farms are included in the Employee Safety Toolkit and the Safe Pig Handling resource at lms.pork.org.

HAZARD COMMUNICATION PROGRAM (RIGHT TO KNOW LAW)

Most facilities today use various products to improve health and cleanliness. When used improperly, these products can be hazardous to caretakers' health. Every hazardous chemical, animal drug and vaccine used on the farm should have a Safety Data Sheet (SDS) provided by the manufacturer. The SDS contains information about safe chemical use and what to do if someone is exposed to hazardous chemicals. The SDSs should be available for everyone on site to access and read.

Caretakers should demonstrate the ability to identify certain parts of the SDS and hazard labels including information on health hazards, first aid procedures and fire hazards. When using chemicals, handle them carefully, follow the prescribed procedures and use the proper containers.

Reproductive hormones may be used on sow farms. These are hormones that act on the reproductive system, and some may have harmful effects to humans exposed to them. Contact with these chemicals – from an accidental needle stick or absorption through the skin – are of greatest concern for female caretakers. Female caretakers should not handle or administer reproductive hormones because of the possibility of accidental exposure. If an accidental exposure should occur, access the safety data sheet and report to a physician immediately.

ANIMAL HANDLING AND THE CARETAKER

Handle pigs using knowledge of pig behavior.

Many injuries on a farm occur when handling animals as many tasks require people to be in close contact with the pigs. To avoid injuries while working with animals, it is very important to understand typical animal behavior, animal responses to different environments, handling pigs of various types and sizes and how to use handling equipment.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Personal protective equipment, also known as PPE, can help caretakers do their job safely. The proper use of personal protective



equipment (PPE) may help to minimize exposure to hazards that cannot be eliminated, reduced or avoided.

It is designed to protect caretakers from loud noises, dust, chemicals, infectious diseases and other substances that can harm a caretaker's health. All PPE must be in good condition and fit properly. Keep the PPE clean and in good shape and check it for damage each time it's worn. It is important to have the correct PPE for each exposure. Examples of PPE commonly used on farms include hearing protection, eye protection, respirators for dust control (e.g., N95) and steel toe boots.

HEARING

Working on a farm will be noisy at times. Exposure to sound levels of 85 dBA over weeks and months leads to hearing loss that will progress over a working lifetime. This type of hearing loss is irreversible and cannot be restored. Noise levels in pig barns can reach damaging levels. Caretakers should consider wearing hearing protection when:

- Feeding animals in breeding, gestation and farrowing barns
- Power washing
- Processing piglets
- Treating and vaccinating animals
- Collecting blood
- Bleeding animals
- Sorting animals
- Moving animals
- Loading animals
- Pregnancy checking in breeding barns
- Heat checking in the breeding and gestation barns
- Artificially inseminating sows and gilts in breeding barns
- Working around aeration fans for grain bins
- Processing feed



RESPIRATORY HEALTH AND SAFETY

Respiratory health and safety should be a consideration for caretakers. Consider wearing either a dust mask or respirator when working in the barn to avoid airborne or respiratory hazards.

EYE PROTECTION

Some tasks may have a risk for eye injury. Consider wearing eye protection when doing the following:

- Power washing
- Checking feeders and feedlines
- Using machinery
- Using hand and electrical tools

A tool can be found at www.osha.gov (keyword e-tool and eye) that helps identify what level of eye protection would be needed for a specific task.⁵⁶

FACILITY, BUILDING, AND MACHINE HAZARDS

The whole farm contains hazards that everyone should be aware of. It is important that you understand all the safety risks in your workplace. The facility includes the area outside of the buildings and includes hazards such as toxic gases. The building itself, including the structure and wiring, as well as the equipment within may hold potential workplace safety hazards.



HAZARDOUS GASES

Poor ventilation can result in hazardous gases including hydrogen sulfide, ammonia, and carbon dioxide. The health of the caretakers and animals requires that barn ventilation is appropriate to maintain an environment that is safe. Some situations may lead to increased concentrations of these gases, such as agitating and removing manure from under floor pits. Do not enter buildings while manure is being agitated and removed.

Hydrogen sulfide is particularly dangerous as it can quickly cause unconsciousness and death. It is advisable to have hydrogen sulfide monitors that will indicate when levels are getting too high.

If people or animals are unconscious and hazardous gases are suspected, do not enter the room as unconsciousness can quickly occur. Contact emergency medical services as outlined in the Emergency Action Plan and start emergency ventilation.

FIRE

Good housekeeping helps prevent fires. Remove weeds and brush from all sides of the building. Keep work areas clean and clutter free. Keep flammable liquids in labeled fireproof containers. Ensure all aisles, stairs, and exits are free of obstructions.

Report any observed fire hazards to management immediately. Electrical motors and appliances are a significant source of fire hazards. Each should be checked regularly for exposed wiring, broken insulation, improper grounding and improper installation.

Designate specific smoking areas. Never smoke in areas where flammable and combustible materials are stored. Make sure flammable substances are kept in fireproof containers, properly labeled with its contents and potential hazards, and stored in safety cabinets approved for flammable materials.

ELECTRICAL

Contact with electrical currents can cause injury, fire, extensive damage and even death. Do not perform any electrical work unless trained and authorized to do electrical work.

Electrical safety incidents can be prevented by taking the appropriate precautions including:

- Ensure that electrical outlets and plugs are in good condition.

- Make sure electrical power cord insulation is not cracked, kinked, broken or the cord ends have loose connections or ground plugs removed.
- Electric power extension cords should only be used on a temporary basis, never as a permanent source of energy.
- Wear insulated footwear when working with electrical tools or appliances.
- Do not overload an outlet.
- Keep all electrical cords away from heat sources.
- Ensure that lockout procedures are used each time that an element of the electrical system is open to physical contact.
- Immediately inform management of any faulty equipment so it can be repaired or replaced.

CONFINED SPACES

Entering areas on a farm designated as a confined space can be dangerous.

Confined spaces are areas that a person can bodily enter into to perform work and have a limited or restricted entry or exit and are not designed for continuous occupancy. Permit-required confined spaces also have one of the following characteristics:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential for engulfing an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section.
- Contains any other recognized serious safety or health hazard such as but not limited to:
 - » Fall hazards
 - » Unguarded machinery
 - » Extreme heat or cold
 - » Steam pipes or chemical lines
 - » Hazardous noise levels
 - » Electrical hazard
 - » Potentially hazardous levels of dust

All confined spaces should be clearly identified throughout farm. Examples on a pig farm include feed bins, manure pits, and lift stations. Entering these

areas is prohibited unless persons entering are trained in confined space entry and all entry procedures have been followed, including air monitoring, ventilation, fit tested PPE and retrieval equipment. Refer to OSHA for more information on confined space entry. Always obey warning signs labeled with the words “confined space,” “no entry,” etc.

DUST CONTROL AND PREVENTION

Low levels of dust are commonly found in pig barns. Short-term inhalation of very small amounts of dust alone is not necessarily harmful. Long-term, continuous exposure to dust in conjunction with other gases in a swine building may result in respiratory problems. Dust masks help block the entry of dust into the lungs and may reduce the risk of respiratory problems.



LOCKOUT/TAGOUT PROGRAM

Servicing equipment is a common task on the farm. The farm should have a lockout/

tagout (LOTO) program in place that specifies how equipment is to be locked and tagged to prevent accidental startup while the equipment is being repaired. Injuries and deaths can occur when an individual unknowingly starts equipment under repair by another caretaker. Know how to identify the equipment locks and lockout tags. Do not attempt to turn on or run any equipment that has a lock or tag on the controls. Caretakers should be trained and authorized to operate lockout/tagout equipment. Refer to OSHA for specific guidelines on lockout/tagout at www.osha.gov (keyword e-tool and loto)^{55, 57, 59}

MACHINE GUARDING

Several types of equipment are used on a swine farm. This equipment has moving parts, nip points, chains, sprockets and gears that can cause serious injury if contacted while operating. All moving parts should have guards to protect caretakers from injury. Refer to OSHA for specific guidelines on machine guarding at www.osha.gov (keyword e-tool and machine guard).⁵⁸



SLIPS



TRIPS



FALLS



SLIPS, TRIPS AND FALLS

Floors can become slippery on swine farms, especially in the pens and alleys. Never run through the barn or jump over gates. When crossing pens, maintain at least two points of contact. Keep one foot on the floor and one hand on the pen divider when crossing.

Housekeeping is key to minimizing slips, trips, and falls. Serious injury due to trips or falls can result if items used in day-to-day activities are not properly put away, covered or stored. Put tools and equipment back in their assigned places. Keep all aisles clear of any items that could potentially cause someone to trip over them.

NEEDLE STICKS AND CUTS

Punctures, cuts and needle stick injuries can occur when giving injections or during piglet processing. Stay focused and attentive. Fatigue increases chances of injury, so take advantage of scheduled breaks so as to not become too tired and in order to stay focused.



Needle stick injuries are not to be taken lightly. Certain antibiotics and other medications for animals can result in severe medical reactions or even death. If a caretaker is accidentally injected with a medication and has a seizure, stops breathing or has any physical reaction, call 911 immediately to summon professional emergency medical help.

In the case of severe cuts, control the bleeding first and summon the person trained in First Aid at the farm. If the injury is minor, wash the wound with soap and water, cover with a sterile bandage, report the injury and seek medical attention if necessary.

All accidental injections and cuts should be reported to management immediately.

Dispose of all used needles and other sharps in designated puncture-proof sharps containers. For additional information regarding needle disposal, see the Food Safety chapter.

SAFE LIFTING

On a pig farm, caretakers are often required to lift animals, carry feed, remove dead animals and move feeders and gates for cleaning. The risk of back injury is greater if correct lifting procedures are not followed. It is recommended that, where applicable, management and human resources agree on a maximum load limit for a person (usually 50 lbs.) and that beyond that point a mechanical lifting device, help from coworkers, or break down of load is used.

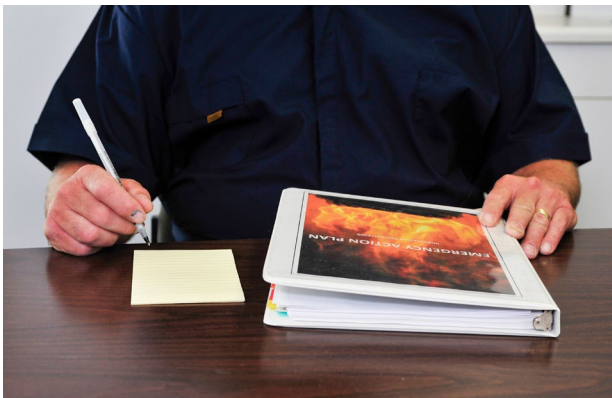
When lifting something, minimize the horizontal distance from the worker's hips and the center of mass of the object to be lifted. A basic workplace design principle is to refrain from placing items at ground level if these items will later be manually lifted.

PERSONAL HYGIENE

Bacteria, fungi, parasites and viruses that may be present in animals or their manure can cause disease in people. Transmission to people may be prevented with simple procedures:

- Wash hands before and after working in the barn and with animals. Wash hands before eating, drinking or smoking; after using the toilet; after cleaning animal housing or animal care areas; and whenever hands are visibly soiled.

- Wear impermeable gloves when caring for sick animals or when assisting a veterinarian with any type of procedure.
- Wear facial protection (e.g., clear face shield or goggles) whenever exposure to splashes or sprays is likely to occur such as during power washing.
- When bites, scratches or lacerations occur while working with animals, wash the injured area with soap and water immediately and consult the designated First Aid person.
- Establish designated areas for eating, drinking and similar activities. These activities should never be done in animal care areas or in the laboratory.
- Do not store human food in the same refrigerator as animal medications.



EMERGENCY ACTION PLAN

Be prepared for emergencies with an emergency action plan.

An emergency action plan (EAP) will prepare producers, management and caretakers to take immediate action when someone is hurt, a fire starts, a tornado is imminent or when other emergencies occur. In an emergency, time cannot be wasted; it could be the difference between life and death.

The farm should have an up-to-date EAP written clearly to provide easy guidance in an emergency. Best practices for the EAP should include the following procedures:

- How to report an emergency, including phone numbers to call, address of the farm to share with the responder, and specific information on getting to remote locations on the farm as appropriate.
- How to notify others on how to respond to the emergency (i.e., evacuate, shelter in place, etc.).
- How to evacuate safely and how to account for everyone.
- How to respond to specific emergencies (i.e., fire, weather, violence, medical emergency, confined space entry), including post-emergency considerations for critical system management.
- How to stabilize the scene when caring for injured workers.
- Where emergency equipment is located, who is trained to use it, and how it is maintained. This includes fire extinguishers and first aid kits.

Additional information to compile includes:

- Contingency plans for critical failures, mortality disposal, manure release, and other upset conditions.
- Structural design drawings and specifications with remodeling indicated.

Caretakers should know the contents of the EAP and emergency procedures for the farm.

Emergency contact phone numbers and the farm address should be posted near telephones, the entrance gate and/or outside of the buildings.

Each farm should have personnel trained in first aid who can provide immediate care. Producers and caretakers should be encouraged to take classes in first aid and CPR for safe workplaces such as those taught by the American Red Cross and other groups. First aid supplies must be readily available in case of an emergency.

Every county in the U.S. has an emergency coordinator who is responsible for responding to all emergencies at the county level. Sharing the emergency action plan with the county coordinator and including them in the plan will be helpful when responding to emergencies.

Visit Ims.pork.org or call the Pork Checkoff Service Center at (800) 456-7675 for assistance locating the EAP template. The Emergency Action Plan tool generates a farm-specific EAP from information entered by the producer.





RESPONDING TO EMERGENCIES

It is important that everyone is trained and can demonstrate what to do in an emergency.

If someone is injured in an accident and needs immediate help:

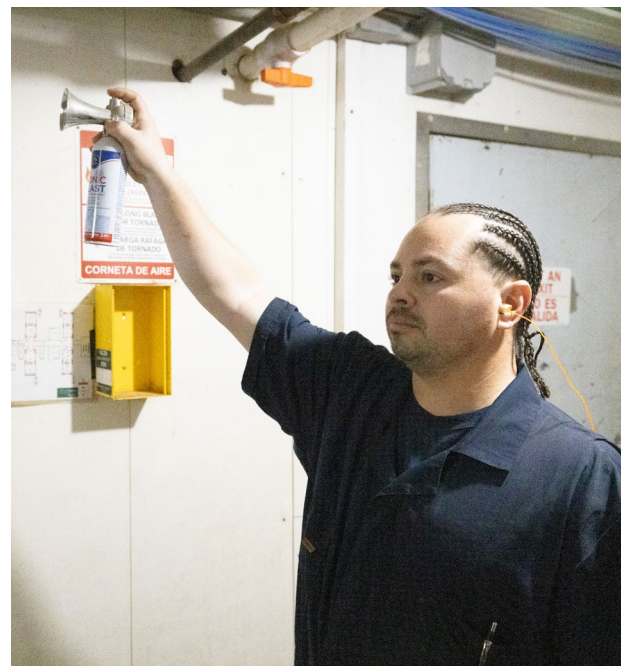
- Call 911 if emergency services are required.
- Determine if evacuation is needed and sound the alarm to notify everyone.
- Ensure caretakers will not put themselves in danger by assisting the injured individual.
- If injury is caused by contact with a chemical or medication, have SDS on hand for First Aid provider and for rescue personnel.
- Make sure the injured individual is cared for immediately by a person trained in first aid.
- Stabilize the incident scene if the hazard still exists to prevent further danger to the injured person or others.
- Notify the appropriate contact listed on the farm Emergency Action Plan.
- Notify management that an incident has occurred. Management will judge the extent of scene to be controlled.

If a fire starts:

- Rescue or remove everyone in immediate danger, if safe to do so.
- Alert all caretakers of the danger by sounding the farm's evacuation signal or sound the fire alarm.
- If possible and safe to do so, confine fire and smoke by closing all windows and doors when leaving.
- Extinguish small fires with a portable fire extinguisher if trained to do so. Never use water on an electrical fire.
- If the fire is too large, evacuate the building and call the fire department.
- Once outside the building, go immediately to the designated meeting place. Do not go back in!

If a tornado warning is sounded:

- Go to the designated tornado shelter. This should be an interior area of the building that is structurally sound without outside windows or skylights such as showers and utility rooms.
- Stay away from windows but stay inside the building. A diagram with shelter assignments should be posted so people know where to go to seek shelter.





ENVIRONMENT

United States pork producers promise to **SAFEGUARD**
NATURAL RESOURCES IN ALL PRACTICES.





ENVIRONMENT

United States pork producers promise to SAFEGUARD NATURAL RESOURCES
IN ALL PRACTICES.

ENVIRONMENT RECORDKEEPING

Record of inspections



GPP

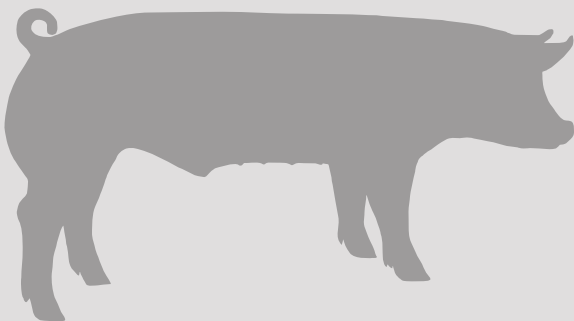
ENVIRONMENT GOOD PRODUCTION PRACTICES

Maintain operations to protect natural resources

Manage manure as a valuable resource and use in a manner that safeguards air and water quality

Manage air quality from production facilities to minimize the impact on neighbors and the community

Protect water quality through correct management of facilities and wastewater systems



As farmers, pork producer's livelihoods are tied to the land, and they understand their responsibility to protect the environment. Over the last decade, producers have played a leading role in advancing animal agriculture's environmental and conservation efforts. Respect for the Earth and its natural resources is part of the nation's agricultural heritage, and pork producers are dedicated to preserving that legacy.²⁹

This chapter will take a close look at the following topic:

1. Environment Management Practices

ENVIRONMENT MANAGEMENT PRACTICES

Maintain farm to protect the quality of natural resources.

Implementing good environmental management practices is fundamental to protecting natural resources, being good stewards of the environment, and being good neighbors in the community. Specific management practices are outlined for general site conditions, buildings, manure management, mortality management and inspections. Federal, state or local regulations may prescribe requirements in addition to, or as amplification on, these basic management practices. Always make certain to know and follow the regulatory requirements which apply to the farm.

GENERAL SITE CONDITIONS

- Set the production site, including manure storage and mortality management areas, back an appropriate distance from environmental receptors such as surface water streams, rivers and lakes, drainages, sinkholes, and drinking water wells. New sites should be located to minimize impacts on neighbors and public use areas. State or local regulations may require minimum setback distances that a farm must meet.
- Locate the production site, including manure storage and mortality management structures, outside of a floodplain. State or local regulations may prescribe more stringent floodplain regulations which must be met.
- Follow conditions within all construction and site permits which may be issued by the City, County, State, or Federal governments.
- Depending on the equipment and operations, in addition to general operating permits, the site may be subject to Storm Water Management Planning, Spill Prevention Control and Countermeasures, New Source Performance Standards and other environmental regulations outside of those directly related to animal production.

- Maintain the production site, including manure storage and mortality management structures, to prevent “clean” run-on water from entering manure containments or mortality management areas. Contain and land-apply surface flow or storm water that has come into contact with manure or mortality management areas according to a nutrient management plan.
- Maintain the production site to minimize erosion or ponding of water and mow vegetative areas.
- Clean up spilled manure and feed in a timely manner.
- Control insect and rodent populations inside and outside of the buildings and at manure storage, mortality storage and compost sites.
- Ensure well heads are properly maintained, including the casing and electrical components are watertight and rodent proof, rubber seals are not cracked or crumbling, and bolts are seated all the way. Ensure the ground is graded away from the well head to prevent water from seeping into the well from the surface. If the well head is in a low spot, construct a small berm around the well head to prevent surface water from pooling, ponding, or congregating around the well head.



BUILDINGS

Manage air quality from production facilities to minimize the impact on neighbors and the community.

- Routinely check, maintain and adjust drinking and cooling water systems to be free of leaks and minimize spillage.
- Keep pens, service aisles, travel lanes and feed alleys free of excessive manure or spilled feed.
- Routinely check and properly adjust automatic feeders to minimize feed waste and spills.
- Clear building ventilation systems of excessive dust buildup on fan motors and blades and exhaust louvers. Repair or replace broken slats on exhaust louvers. Adjust belt tension to ensure proper fan operation.
- Ensure exterior feed bin lids are closed.
- Temperature check fan motors on a regular basis to identify problems.
- Ensure that drop curtains on buildings so equipped are correctly adjusted, operate properly and are free of rips or tears. Check emergency curtain drops are properly set and will work in a power outage.
- Ensure buildings have screening or other means to prevent birds from gaining access to buildings. Keep walls and roofs free of holes or gaps that could serve as access points for birds, rodents or pests.
- Maintain a perimeter, called a sterile zone, immediately adjacent to and surrounding the facility. For specific information regarding creating a sterile zone around the facility, refer to the biosecurity section of the Food Safety chapter.
- Ensure under-building manure pits prevent seepage into or out of the pit and have overflow protection.
- Perform routine inspections of the barn's concrete foundation, stem walls, and under pit walls.
- Do not dispose of trash, animal health consumables and needles in under-building manure pits.
- Cover manure storage pit access points to prevent human or animal entry and post with warning signs.
- Close and secure manure transfer line vents and cleanouts when not in use.
- Drain and recharge shallow flush pits frequently.
- Properly maintain scrapers and belts and cycle frequently.

- Incorporate emergency backup generators into a routine maintenance plan, checking battery charge, battery acid level, hose and belt conditions. Run emergency backup generators on a regular basis and transfer power at least twice per year to ensure they will operate when needed.

MANURE MANAGEMENT

Manage manure as a valuable resource and use in a manner that safeguards air and water quality.

- Ensure the farm has a current written nutrient management plan (NMP) that contains all necessary information to describe the management of manure and mortality compost nutrients. The plan should include field maps, soil maps, description of conservation and setback practices, description of crop rotation and yield expectations, soil and manure test results, field-by-field nutrient budgets, description of the timing and method of application, description of calibration and maintenance of the land application equipment and records of manure application and transfer.⁴¹
- Size manure storage systems to contain the anticipated manure generation from the maximum number of animals that could be housed at the farm for the time periods between manure removal set forth in the farm's NMP.
- Control and secure access to manure storage areas and liquid transfer equipment to prevent unauthorized access or vandalism. Ensure liquid storage and associated areas have proper signage (such as confined space) and have appropriate locks and lifesaving equipment in place. Inspect these areas on a regular basis.
- Ensure manure loading and extraction areas are accessible in all weather conditions.
- Maintain dikes, embankments and areas immediately adjacent to earthen manure storage basins or lagoons so they are free of erosion, burrowing animal holes or nests, woody vegetation, or other damage. Mow grass vegetation to facilitate bank inspection and discourage burrowing animal nesting.
- Design and place inlets and outlets to manure storage structures to minimize odor, prevent blockage and secured to prevent unauthorized access or vandalism.



- Fill above-ground fabricated manure storage tanks from the top unless equipped with backflow prevention devices and redundant closure valves or secondary containment capable of holding the entire volume of the structure.
- Regularly inspect lift stations, including overflow devices, lead-lag settings, lift pumps and electrical wires, and perform regular preventative maintenance.
- Ensure liquid manure storage ponds, lagoons or above ground storage has a liquid level gauge or other means of determining the level of manure in the containment structure. Calibrate liquid level gauges periodically to ensure they have not shifted.
- Ensure any monitoring wells are properly sealed and locked.
- Equip pressurized manure transfer systems with manual and automatic shut-off devices.
- Properly maintain and calibrate land application equipment and ensure the presence of manual and automatic shut-off devices. Follow safe manure removal practices when agitating and removing manure from below building deep pit storage.

MORTALITY

Ensure the farm has a written mortality management plan that at a minimum addresses a description of and standard operating procedures for handling and final disposition of mortalities under both routine as well as catastrophic mass mortality situations and includes recordkeeping of mortality disposal.

- Control mortality storage and collection areas to limit access by unauthorized persons and scavenger animals.
- Screen mortality storage, collection and composting areas by visual barriers between the areas of public roads or the property line and from above.
- Mortality management areas should be accessible in all weather conditions.
- Contain and clean up leachate from mortality animals. If mortality animals are prone to releasing liquid, such as during summer months, place shavings or other absorptive material under them to prevent free liquid.

INSPECTIONS

- Conduct a thorough inspection of the production site, including manure storage and mortality management structures, at a frequency that allows timely corrective action of problems that may be observed, but no less frequently than weekly.
 - » Inspect production buildings at least weekly. Situations may arise when a more frequent inspection schedule may need to be implemented. For example, lagoons should always be inspected after every precipitation event or during a period of extended precipitation.
 - » Develop an inspection checklist for the farm and use it to document each building inspection.
- Additional inspections may be required via State or County regulations.
- Records should be maintained for a minimum of three years or as required by the facilities operations permit.





COMMUNITY

United States pork producers promise to **CONTRIBUTE TO A BETTER QUALITY OF LIFE IN THEIR COMMUNITIES.**





COMMUNITY

United States pork producers promise to **CONTRIBUTE TO A BETTER QUALITY OF LIFE IN THEIR COMMUNITIES.**

COMMUNITY RECORDKEEPING

No Records Available

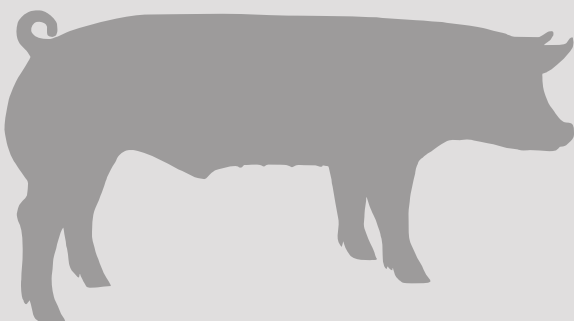


GPP

COMMUNITY GOOD PRODUCTION PRACTICES

Play an active role to help build a strong community

Maintain trust by sharing your farm story



Producers understand the important role their local business plays in the lives of caretakers and the communities in which they live and work. They honor this obligation by respecting and supporting these communities in a number of ways. They recognize that being welcomed and appreciated by the community is a privilege that must be earned and maintained. They acknowledge that practices can affect the trust the community has in pork production and all U.S. pig farms. They know that operating in a manner that protects the environment and public health is critical to having an active role in building a strong community while acknowledging and addressing the community's concerns in an honest and sincere way.

This chapter will take a close look at the following topics:

1. Participate in the Community
2. Connect to your Community

PARTICIPATE IN THE COMMUNITY

Play an active role in helping to build a strong community.

Farmers are rooted in the local community. Pork producers have a unique opportunity to nourish families, neighbors and communities. They embrace this great responsibility by being good caretakers of animals and land in producing food.

Producers do their part by:

- Committing to working together, regardless of the type, size or philosophy of the farms, to continue improving the food supply.
- Doing everything in their power to protect animals' health and produce a high-quality product.
- Safeguarding the environment (land, air and water) to ensure sustainability for the future.
- Committing to the local economy by managing their farm business well as they produce a high-quality product desired by today's consumers.
- Being transparent about the how their farms work for the benefit of those less familiar with agriculture by sharing their stories about how producing pork is a sustainable practice.

Being a pig farmer today isn't just a profession; it's a way of life. The food they produce reflects this by how producers value the trust placed in them by friends, neighbors and the community.

SHARE YOUR STORY

Maintain trust by sharing your farm story.

Sharing the human side of agriculture is just as critical as upholding high production standards and focusing on continuous improvement. More than

ever, it's important to bridge the gap between pork producers and consumers who mostly know very little about how their food is actually produced. To do this, start by being transparent about how pigs are cared for and by demonstrating how today's pig farms are managed responsibly.

Sharing your story can happen in both formal and informal settings, and can be directed at anyone working within or outside of the pork industry. State pork associations and the National Pork Board have provided the industry with resources that can be used in preparing for and having these conversations.

MODERN PIG FARMING ADVANCEMENTS

The agricultural landscape in America has changed dramatically over generations. Scientific advancements based on research and adoption of technology have advanced modern pig farming methods that benefit people, pigs and the planet.

Producers have adopted modern production practices for many reasons, including for animal well-being, food safety, the environment and overall improved efficiency. These practices are based on sound science and input from agricultural experts, including many from Land Grant universities. Some examples stemming from



adoption of modern pork production include the overall health improvement of pigs, better food safety and simply the overall improved well-being of pigs.

Today's producer can be more specialized raising pigs to meet various attributes like raising a certain breed or focusing on pigs at specific states of development. Additionally, modern farming practices include the ability for pigs to be raised indoors, aiding producer efforts to monitor health and biosecurity. Regardless of farm type, the cumulative advancements of the pork industry vastly improved the safety and consistency of today's pork.

Despite decades of improvements, today's pig farmers are not content with current practices. As with most farmers, constantly finding new ways to get better through innovation, hard work and investment are essential to their future success. This is the path they will remain on for generations to come as they strive to care for animals, preserve natural resources, protect public health and provide a safe work environment.

BE A GOOD NEIGHBOR

Producers' desire to be a good neighbor and a good business person motivates them to build trust and good relationships with their community.

Programs such as PQA Plus not only help ensure the safety of the food supply, the animals cared for, the environment and caretakers, but help make sound business decisions. An expert review of the farm and its practices can lead to greater efficiency and less waste, lowering production costs. Producers focus on continuous improvement, which benefits business, caretakers, neighbors and communities.

GIVE BACK

Consumers are increasingly interested in how food animals are raised.

Sharing the story of what producers do on farms and providing caretakers with training programs, such as PQA Plus, helps to

build trust with the public and maintains the integrity of the pork industry. Pork producers and caretakers across the country embrace the principles of the PQA Plus program by doing the right thing for both their business and consumers.



Giving back to the community builds stronger bonds with caretakers and other community members.

These interpersonal relationships are vital to gaining trust and maintaining the integrity of the local pork business and the entire pork industry.

Encouraging everyone on the farm to volunteer and lend a helping hand to the community demonstrates that producers care about the people around them and the future of the community. In return, the community members are further invested in the success of the farm business.

CONNECT TO THE COMMUNITY

Raising pigs is a complex, dynamic business. Like leaders in many other industries, pork producers face challenges that affect how the business is run and how they fit into the community.

Pork producers recognize the need to be good neighbors and understand the concerns of those less familiar with farming and livestock production. That's why producers:

- Recognize that being welcomed and appreciated by the community is a privilege to earn and maintain.
- Understand that some modern farming practices can affect the trust the community has in livestock production and pork farms.
- Strive to operate in a manner that will protect the environment and public health.
- Play an active role in building a strong community.
- Acknowledge the community's concerns and try to address the concerns in an honest, sincere manner.
- Share the story and benefits of modern farming.
- Tell family and friends about the industry's We Care® ethical principles.
- Explain how science, technology and concern for animals guide the farming practices.
- Inform neighbors about farm activities. Get to know the neighbors, be a good neighbor, listen to people's concerns and share with them about what goes on at the farm.
- Volunteer time or donate to worthy causes in the community.
- Proudly represent the farm and the industry within the community.





GLOSSARY
RESOURCES AND FORMS

GLOSSARY

Administration Techniques:

Refers to proper delivery of medication by injection, water or feed.

Antibiotic:

A chemical substance produced by a microorganism which has the capacity to inhibit the growth of or kill other microorganisms.

Antimicrobial:

An agent that kills bacteria or suppresses their multiplication and growth. This includes antibiotics and synthetic agents.

Biological Hazard:

These include microbiological or zoonotic agents, such as bacteria including Salmonella and parasites, such as Trichinella.

Channel Partners:

Retail and Foodservice Companies who market and sell pork and pork products.

Chemical Hazard:

These include natural toxins, drug residues, such as violative levels of sulfonamides or antibiotics, pesticides and unapproved use of direct or indirect food or color additives.

Drug Sponsor:

The manufacturer of the animal drug.

Environmental Protection Agency (EPA):

The government agency that sets tolerance levels for pesticides used in pork production.

Ethical Principles:

U.S. pork producers' commitment to produce safe food, protect and promote animal well-being, safeguard natural resources in all of their practices, ensure their practices protect public health, provide a work environment that is safe and consistent with their other ethical principles, and contribute to a better quality of life in their communities.

Extra-label Use:

Use of an animal drug in a manner that is not in accordance with the approved drug labeling. This type of use is done legally under the direction of a veterinarian under a VCPR. Extra label use is not allowed in medicated feeds.

Food and Drug Administration (FDA):

Agency of the U.S. Department of Health and Human Services. The FDA is responsible for regulation of medicated animal feeds and most animal-health products.

Food Safety and Inspection Service (FSIS):

A branch of the U.S. Department of Agriculture that is responsible for inspecting all pigs and sanitation levels at packing plants.

Foreign Animal Disease (FAD):

A Foreign animal disease (FAD) is an animal disease or pest, whether terrestrial or aquatic, not known to exist in the United States or its territories.

current Good Manufacturing Practices (cGMPs):

A set of guidelines for processing feed designed to prevent feed contamination and provide reasonable assurance that the feed is manufactured accurately.

Good Production Practices (GPPs):

Practices essential to demonstrating the We Care® Ethical Principles

Hazard Analysis and Critical Control Points (HACCP):

A system that identifies specific hazards and preventive measures for their control to minimize the risk of producing defective products and services.

Intramuscular (IM):

Injection into the muscle tissue of the pig.

Intranasal (IN):

Administration in the pig's nasal passages.

Intraperitoneal (IP):

Injection into a pig's abdominal cavity. This type of injection should only be used upon veterinary instruction and guidance as serious injury or death to the pig can occur.

Intravenous (IV):

Injection into a pig's vein. This type of injection should only be used upon veterinary instruction and guidance as serious injury or death to the pig can occur.

Label Use:

Use of a drug as exactly specified on the label.

Operation (also known as a system):

A grouping of pork production sites/farms forming a complex or unitary whole. May consist of only one site or multiple sites.

Over-the-Counter (OTC):

Animal health products that can be purchased lawfully without a veterinary feed directive order or prescription.

Physical Hazard:

These include glass, metal or needle fragments.

PQA Plus Advisors:

Veterinarians, animal scientists, university Extension specialists or adult ag educators that conduct producer training and on-farm assessments.

PQA Plus Candidate:

An individual seeking certification in PQA Plus.

PQA Plus Certification:

Recognition that an individual has completed PQA Plus education and training from a PQA Plus advisor.

PQA Plus Endorsement:

Recognition that a PQA Plus certified individual has received additional training from a PQA Plus advisor and successfully completed an examination. It allows a producer/field staff to conduct a self assessment of a production site along with a follow up conversation with an advisor.

Plus Site Assessment:

An educational site evaluation tool for pork producers to objectively assess records, facilities and the well-being of their pigs' on-farm.

PQA Plus Site Status:

Recognition offered to an individual site on which a completed on-farm assessment has taken place.

PQA Plus Trainers:

Veterinarians, animal scientists, university Extension specialists or adult ag educators identified and trained by the National Pork Board that conduct advisor and producer training and on-farm assessments.

Prescription Drugs:

Drugs that can be obtained only by the means of a veterinarian's prescription.

Premises Identification Number (PIN):

A standardized unique identifier assigned by the U.S. Department of Agriculture (USDA) after the site is registered through the state.

Secure Pork Supply (SPS) Plan:

A business continuity plan that will support the ability for pork producers to continue to move pigs in the event of a trade-limiting FAD of swine in the United States.

Site/Farm:

The location of an individual pork production facility. A site is defined by its premises identification number, which can be obtained by registering the site at the state level.

Subcutaneous (SQ):

Injection under a pig's skin.

Maximum Residue Level (MRL):

Maximum amount of drug that may be allowed in the animal's tissues at time of harvest that has been demonstrated to be of no-risk to public health and has been approved by the FDA. This also is known as a tissue tolerance level.

Veterinary-Client-Patient Relationship (VCPR):

A relationship that exists between a client and a veterinarian where the veterinarian has assumed the responsibility for making medical judgments regarding the health of the animals, has sufficient knowledge of the animals and is readily available for follow-up consultations.

Veterinary Feed Directive (VFD):

A category of animal drugs created by the Animal Drug Availability Act of 1996. This category is specific for new/approved antimicrobial drugs used in feed to treat disease. FDA determines which drugs are VFD drugs. These drugs must be ordered by your veterinarian.

Violative Drug Residue:

A drug remaining in animal tissue after harvest that exceed the levels allowed by the FDA.

We Care® Initiative:

A joint effort of the Pork Checkoff, through the National Pork Board and the National Pork Producers Council, which helps demonstrate that producers are accountable to established ethical principles and animal well-being practices.

Withdrawal Time:

Length of time between the last day animals were given an animal-health product and when they may be harvested.

PORK CHECKOFF / INDUSTRY RESOURCES AND FORMS

- porkcheckoff.org/pork-production-management/
- lms.pork.org/Tools
- securepork.org

ONLINE TOOLS – INTERACTIVE

- Employee Safety Toolkit
- Safe Pig Handling
- Humane Animal Handling
- On Farm Euthanasia Modules
- Emergency Action Plan
- Farm Level Crisis Plan
- Environmental Sustainability Toolkit
- Barn Culture resources (including SOP templates)
- Swine Care Handbook
- Neighbor-to-Neighbor Training
- Common Swine Industry Audit Materials (SOPs, training modules)
- Secure Pork Supply Materials (including program standards, resources forms, and SOP templates)

ONLINE – DOWNLOADABLE RESOURCES

- PQA Plus handbook and forms
- Site Assessment Guide
- Swine Care Handbook
- Sow Housing Options
- Sow Housing Management
- Sow Housing How-to Guides
- Fact Sheets and brochures on a wide range of topics
- Common Swine Industry Audit materials

USB (THUMB DRIVE)-BASED RESOURCES

Order through the National Pork Board

- Common Swine Industry Audit – educational training modules
- Humane Animal Handling Modules
- Euthanasia Training Modules

MATERIALS

Available at porkcheckoff.org and 800-456-7675.

- Site Assessment Guide
- Certification handbook
- On-Farm Euthanasia of Swine brochure



Background

The official identification and traceback of swine in commerce is a regulated process. Since the late 1980s the U.S. swine industry has had a mandatory system for traceback of swine that have entered into harvest channels to the last farm of ownership. This includes very specific means of identification for market swine and market sows and boars, as laid out in the Federal Code of Regulations.

The Swine ID Plan

The Swine ID Plan is an industry initiative to implement a set of program standards for the identification of swine developed in 2004 by the industry to enhance the current federal regulations. There are three key components to implementing the Swine ID Plan - premises identification, animal identification and animal tracing.

Premises Registration

Premises Registration is the identification of a location where livestock are raised, housed, or pass through during commerce. The standardized Premises Identification Number (PIN), is a seven character alphanumeric code, with the right-most character being a check digit based on ISO7064:1983 algorithm and nationally, over 95 percent of the estimated swine premises have registered to receive one. The standardized PIN is obtained through USDA APHIS PIN allocator after the site is registered through the state. The Premises Identification Number (PIN) is different than the Location Identification Number (LID) which is administered through a State or Tribes internal system.

Animal Identification

Animal Identification is the process by which pigs are officially identified either as part of a group, or lot, or individually. Pork producers will be responsible for officially identifying their swine in compliance with the Swine ID Plan's program standards which includes the parameters for officially identifying groups and individual animals.

Animal Tracing

The program standards in the Swine ID Plan include parameters for an animal movement record to be generated each time one of a set of events occurs, such as movement to a new premises or harvest facility. A movement record would include the animal's or group's identification number, the premise identification number of the sending and receiving premises, the date of movement, number of head moved and the reason for movement. Records will be maintained for three years after the swine leave the premises and will be available to animal health officials for inspection.

Summary

The Swine ID Plan enhances the ability to determine origin of swine that enter harvest channels through the use of producer, packer, state and federally required records. Over the last seven years the National Pork Board has been conducting an educational campaign that focus on implementing the key components to the Swine ID Plan. More detailed information on plan specifics can be found at pork.org.



Official USDA PIN tags.



VETERINARIAN-CLIENT-PATIENT RELATIONSHIP (VCPR)

Premises ID Number: _____ Farm Name: _____

This letter is to confirm that a Veterinarian-Client-Patient Relationship (VCPR) exists for the specific premises indicated above. As part of the VCPR for this premises:

1. A veterinarian has assumed the responsibility for making medical judgments regarding the health of the animal(s) and the need for medical treatment, and the client (the owner of the animal(s) or other caretaker) has agreed to follow the instructions of the veterinarian.
2. There is sufficient knowledge of the animal(s) by the veterinarian to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s).
3. The veterinarian is readily available for follow-up in case of adverse reactions or failure of the regimen of therapy.

Veterinarian

Printed Name: _____

Signature: _____ Date: _____

Producer

Printed Name: _____

Signature: _____ Date: _____



CONFIRMATION OF NO MEDICATIONS ADMINISTERED

I confirm that no medications were administered to pigs marketed from

Premises ID Number: _____ Barn: _____

between the following dates:

Date pigs entered barn: _____

Date last pig exited barn: _____

Printed Name of Barn/Site Manager: _____

Signature of Barn/Site Manager: _____ Date: _____



VACCINATION/MANAGEMENT SCHEDULE: NON-BREEDING HERD

HORARIO DE VACUNACIÓN / MANEJO: PIARA NO REPRODUCTORA

Unit Location:

Premises ID Number:

Ubicación de la unidad:

Número de ID de las instalaciones:

Nursing Pigs Cerdos en periodo de lactancia								
Weaned Pigs Cerdos destetados								
Grower (40-100 lbs.) Crecimiento (40-100 lbs.)								
Finisher (100 lbs - Market) Finalización (100 lbs - mercado)								



VACCINATION/MANAGEMENT SCHEDULE: BREEDING HERD

HORARIO DE VACUNACIÓN / MANEJO:
PIARA REPRODUCTORA

Unit Location:


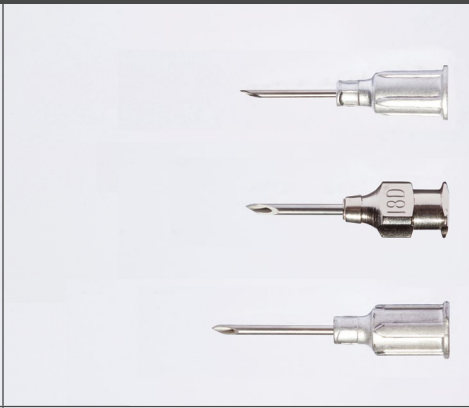

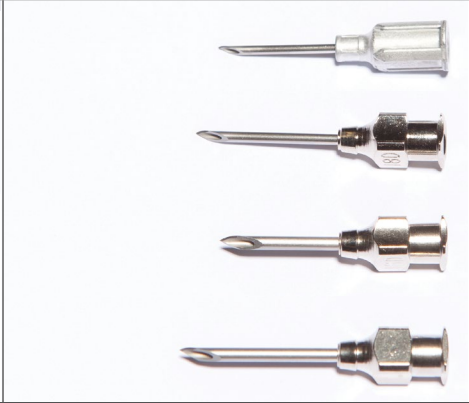

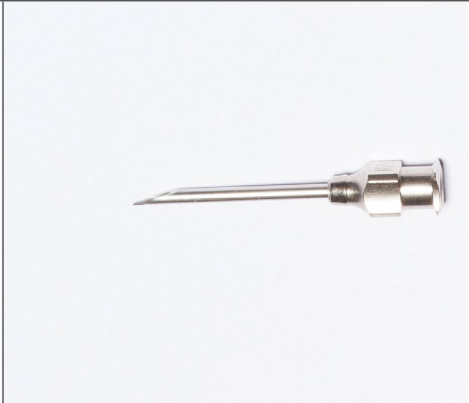

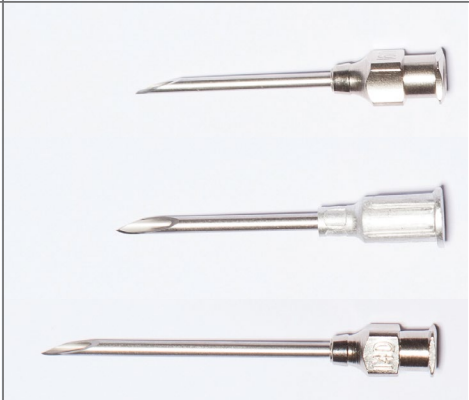
Premises ID Number:

Ubicación de la unidad:

Número de ID de las instalaciones:

Gilt Pre-Breeding	Primerizas pre-inseminación							
Sows Pre-Breeding	Cerdas pre-inseminación							
Boars	Verracos							
Gilts Pre-Farrow	Primerizas pre-parto							
Sows Pre-Farrow	Cerdas pre-parto							

NEEDLE SIZE REFERENCE CHART

STAGE OF PRODUCTION	IM NEEDLE RECOMMENDATION	ACTUAL NEEDLE SIZES
 <p>Piglet</p>	<p>18 or 20 Gauge 1/2 or 5/8 inch Length</p>	
 <p>Nursery</p>	<p>16 or 18 Gauge 3/4 or 5/8 inch Length</p>	
 <p>Market/Finish</p>	<p>16 Gauge 1 inch Length</p>	
 <p>Breeding</p>	<p>14 or 16 Gauge 1 or 1-1/2 inch Length</p>	

Note: The Common Swine Industry Audit (CSIA- version 2023) states needles that are 16 gauge or larger size (lower number) must be detectable.

Farm Name:

Date:

Nombre de la granja:

Fecha:

Drafted by Redactado por:

Caretakers Responsible for Euthanasia:

Cuidadores responsables de la eutanasia:

Phase of Production/ Size of Pig	Primary Euthanasia Method	Backup Euthanasia Method/Device
Fase de producción / tamaño del cerdo	Método primario de eutanasia	Método / dispositivo de respaldo de eutanasia
Suckling Pigs Lechones		
Nursery Pigs <70lbs. Cerdos en crecimiento		
Grower-Finisher Pigs, <Market Weight Cerdos en crecimiento-fi- nalización,		
Mature Pigs, Sows and Boars Cerdos maduros, cerdas y verracos		

Caretakers responsible for euthanasia and that have been trained in methods of euthanasia, confirming insensibility and confirmation of death. Cuidadores responsables de ejecutar la eutanasia y que han sido capacitados en los distintos métodos y en la confirmación de insensibilidad y muerte.

Caretaker Name	Date of Training	Topic of Training (method, confirming insensibility, confirming death)	Trainer Name
Nombre del cuidador	Fecha de la capacitación	Tema de la capacitación (método, confirmando la insensibilidad, confirmando la muerte)	Nombre del capacitador

Trainer/Advisor:
Capacitador / Asesor:

Address:
Dirección:

Email:
Correo electrónico:

Class Date:
Fecha de la clase:

Company:
Compañía:

Phone:
Teléfono:

Advisor ID (if available):
ID del asesor (si está disponible):

	First and Last Name	Company/ Department	Work Premises ID	Training Topic
	Primer nombre y apellido	Compañía / Departamento	ID de las instalaciones del trabajo	Tema de la capacitación
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

**Secure Pork Supply Participation: Must provide the Premises ID of the work/farm location where the individual works.*

**Participación segura en el suministro de carne de cerdo: debe proporcionar el ID de la instalación de la ubicación del trabajo / granja donde trabaja el individuo.*

INDIVIDUAL DEVELOPMENT PLAN

Trainee:
Aprendiz:

Evaluation Date:
Fecha de evaluación:

Evaluated By:
Evaluado por:

Next Evaluation:
Próxima evaluación:

Tasks	Proficiency Rating 1=poor 3=proficient	Proficiency Rating (6 mo) 1=poor 3=proficient	Notes
Tareas	Nota de competencia 1=pobre 3=competente	Nota de competencia (6 Meses) 1=pobre 3=competente	Notas

INDIVIDUAL DEVELOPMENT PLAN—Steps to improve performance
PLAN INDIVIDUAL DE DESARROLLO—Pasos para mejoramiento del rendimiento

Employee Signature:
Firma del empleado:
Supervisor Signature:
Firma del supervisor:

Date:
Fecha:
Date:
Fecha:

Premises Identification Number (PIN):
Número de identificación de la instalación (PIN):

Farm Name:
Nombre de la granja:

Auditor Name:
Nombre del auditor:

Phase of production at the site (check all that apply): Breeding Non-Breeding
Fase de producción en el sitio (marcar todas las que correspondan): Reproducción No reproducción

Total number of Breeding pigs on the site:

Cantidad total de animales para reproducción en el sitio:

Total number of Non-Breeding pigs on site:
Cantidad total de animales para no reproductivos en el sitio:

Total number of Non-Breeding pigs observed:
Cantidad total de cerdos no reproductores observados:

Site State:
Estado del sitio:

Farm Manager:
Administrador de la granja:

Audit Date:
Fecha de auditoría:

Total number of Breeding pigs observed:

Cantidad total de cerdos reproductores observados:

General Comments about the Site Comentarios generales sobre el sitio
Facility Evaluation Evaluación de las instalaciones
Animal Evaluation Evaluación de los animales
Caretaker Evaluation Evaluación del cuidador
Procedure Evaluation Evaluación del procedimiento

Internal Site assessments must be conducted at least quarterly on sow farms and semi-annually on nursery and finishing farms.
Las evaluaciones internas del sitio se deben realizar cada tres meses en granjas de cerdas y cada seis meses en granjas de crecimiento y finalización.

To be completed by Assessor Para ser completado por el asesor

Site ID: ID del sitio	Date of visit: Fecha de la visita:	Assessor name: Nombre del asesor:
-----------------------	------------------------------------	-----------------------------------

Description of Area(s) that need Improvement: Descripción de las áreas que necesitan mejoras:

To be completed by Producer Para ser completado por el productor

Please work with your PQA Plus® Advisor to document how the noncompliant issue has been corrected or that there is a plan in place to correct the issue. Describe how the issue(s) has been corrected or the plan and timeline in place for correcting the issue.
Trabaje con su asesor de PQA Plus® para documentar cómo se han corregido las áreas que no cumplen con los requisitos o para constatar que haya un plan para corregirlas en progreso. Describa cómo el problema(s) ha sido corregido o el plan y el cronograma para corregir el problema.



I confirm my commitment to the highest standards of animal care and protection through the *See it? Stop it!* initiative.

Yo confirmo mi compromiso con los más altos estándares de cuidado y protección de los animales a través de la iniciativa *¿Lo vio? ¡Deténgalo!*

In accordance with the *See it? Stop it!* values, I agree that:

De acuerdo con los valores *¿Lo vio? ¡Deténgalo!*, estoy de acuerdo que:

1. Animal abuse, neglect, harm and mishandling are unacceptable and will not be tolerated.
1. El abuso, la negligencia, el daño y el maltrato de los animales son inaceptables y no serán tolerados.
2. Proper animal care is the responsibility of every individual who is around animals, including me.
2. El cuidado apropiado de los animales es responsabilidad de cada individuo que está cerca de los animales, incluyéndome a mí.
3. I have an obligation to immediately report any signs of deliberate animal abuse, neglect, harm or mishandling to a supervisor or other individual responsible for enforcement of proper animal care.
3. Tengo la obligación de informar de inmediato cualquier señal de abuso intencional, negligencia o maltrato contra los animales a un supervisor u otra persona responsable de hacer cumplir el debido cuidado de los animales.

I pledge my support of, responsibility for and commitment to the values of the *See it? Stop it!* initiative.

Prometo mi apoyo, responsabilidad y compromiso con los valores *¿Lo vio? ¡Deténgalo!*

Name (printed):

Nombre (impreso):

Signature:

Firma:

Date:

Fecha:

As animal caretakers, all employees of [Company] and all individuals holding contracts with [Company] have a moral and ethical obligation to provide humane treatment to animals in their care. Willful abuse, cruelty and/or neglect are unacceptable and will not be tolerated. Willful acts of abuse or neglect are defined as acts outside of normally accepted production practices that intentionally cause pain and suffering including, but not limited to:

Como cuidadores de animales, todos los empleados de [Compañía] y todas las personas que tienen contratos con [Compañía] tienen la obligación moral y ética de brindar un trato humano a los animales bajo su cuidado. El abuso intencional, la crueldad y / o el descuido son inaceptables y no serán tolerados. Los actos intencionales de abuso se definen como actos ajenos a las prácticas de producción normalmente aceptadas que causan dolor y sufrimiento intencionalmente, que incluyen, entre otros:

- Intentionally applying prods to sensitive parts of the animal such as the eyes, ears, nose, genitals or rectum.
Aplicar intencionalmente las picanas en áreas sensibles del animal como los ojos, orejas, nariz, genitales o ano. El uso excesivo de la picana podría calificar como un acto intencional de abuso.
- Malicious hitting or beating of an animal. This includes forcefully striking an animal with closed fist, foot, handling equipment (sort board, rattle paddle, etc.) or other hard or solid objects that can cause pain, bruising or injury.
Golpear / darle de palos maliciosamente a un animal. Esto incluye golpear con fuerza a un animal con el puño cerrado, el pie, el equipo de manejo (tabla de clasificación, sonaja, etc.) u otros objetos duros o sólidos que pueden causar dolor, hematomas o lesiones.
- Deliberate slamming of gates on animals
Espantar los cerdos desde las repisas altas, plataformas o escalones mientras se mueven, cargan o descargan, causando que los cerdos caigan al suelo.
- Excessive prod use as defined in the handling equipment section found later in this chapter.
Arrastrar animales conscientes por cualquier parte de su cuerpo, excepto en el raro caso en que un animal no ambulatorio debe ser trasladado por causa de una situación que pone en peligro la vida. Los cerdos no ambulatorios se pueden mover usando una alfombra de arrastre.
- Driving pigs off high ledges, platforms or steps while moving, loading or unloading, causing pigs to fall to the ground.
- Dragging conscious animals by any part of their body, except in the rare case in which a non-ambulatory animal must be moved from a life-threatening situation. Non-ambulatory pigs may be moved by using a drag mat.
- Purposefully dropping or throwing animals.
Dejar caer o arrojar animales de forma intencional.
- Causing physical damage to the snout or tusks of a boar as a means to reduce aggression. This excludes nose ringing and tusk trimming.
Causar daños físicos en el hocico o los colmillos de un verraco como medio para reducir la agresión (esto excluye el arete de la nariz y el recorte de colmillos).
- Failure to provide food, water and care that results in significant harm or death to animals.

Malicious driving of ambulatory animals on top of one another either manually or with direct contact with motorized equipment (this excludes loading a non-ambulatory animal for transport). If you are unsure about what constitutes correct and humane animal care, it is your responsibility to seek assistance and guidance from a supervisor.

Si no está seguro sobre qué consiste el cuidado de los animales correcto y humanitario, es su responsabilidad buscar la ayuda y consejo de su supervisor.

If a willful act of abuse, cruelty or neglect is observed, the observer should immediately report the incident to the farm manager, the production manager or a [Company] veterinarian within 48 hours of the incident.

Si se observan actos de abuso, crueldad o negligencia, se deben informar inmediatamente al administrador de la granja, al gerente de producción o a [Compañía] veterinaria dentro de las 48 horas del incidente.

Any individual who 1) is found to have committed a willful act of animal abuse, cruelty or neglect, or 2) witnesses an act of animal abuse, cruelty or neglect and fails to report the incident as outlined herein, will be immediately terminated and the matter will be referred to the applicable county attorney for a determination by this official as to whether or not any laws have been violated.

Cualquier persona que 1) cometa un acto intencional de abuso, crueldad o negligencia animal, o 2) sea testigo de un acto de abuso, crueldad o negligencia animal y no informe el incidente como se describe en este documento, será despedido inmediatamente y el asunto será remitido al fiscal del condado que corresponda para que estos oficiales determinen si se violó alguna ley o no.

I acknowledge that I have read and I agree with [Company] animal welfare policy as outlined above.

Reconozco que he leído y estoy de acuerdo con la política de bienestar animal de [Compañía] como se describe anteriormente.

Name (printed): Nombre (impreso): _____

Signature: Firma: _____ Date: Fecha: _____

Templates can be found on *porkcheckoff.org*. Access the Certifications & Tools page, then Producer Tools>Common Swine Industry Audit.

- Animal Handling of Breeding Stock & Piglets
- Animal Handling of Nursery and Finishing Pigs
- Caretaker Training
- Daily Pig and Barn Care
- Treatment Management of Breeding Pigs
- Treatment Management of Nursery/Finisher Pigs

More Pork Checkoff SOPs can be found at <https://lms.pork.org/tools/view/barn-culture/sops>.

BREEDING AND GESTATION

- Artificial Insemination of Sows and Gilts
- Boar Exposure
- Body Condition Scoring
- Breeding Animal Management, Culling Females
- Checking Water Availability, Breeding and Gestation
- Estrus Heat Detection
- Feeding, Breeding and Gestation Sows
- Gestation Barn Walk
- Power Washing Breeding and Gestation Barns
- Pregnancy Detection
- Semen Handling

CROSS PHASE

- Animal Treatment - Intramuscular Injections
- Euthanasia CO2
- Euthanasia Penetrating Captive Bolt
- Facility Checklist and Housekeeping
- Feed Ordering
- Mortality Composting
- Mortality Incineration
- Power Failure Temp Variation Test Alarm System
- Power Failure Test Backup Generator
- Power Failure Test Emergency Curtain Drops
- Removing Mortality BFG

FARROWING

- Castration
- Cleaning Farrowing Room Before Loading
- Day One Farrowing House Procedures - Piglets
- Day One Farrowing House Procedures - Sows
- Farrowing Room Observation
- Feeding and Water for Sows - Lactation
- Loading Sows Into Farrowing Rooms
- Piglet Euthanasia Blunt Force Trauma
- Tail Docking
- Weaning

WEAN TO FINISH

- Daily Pig and Barn Care
- Feeder Adjustments
- Identifying Fall Behind Pigs and Treatment Pen Management
- Load Out of Market Hogs
- Loading Pigs Into Rooms
- Operating a Water Medicator
- Power Washing Grow-Finish Barns
- Starting Weaned Pigs
- Supplemental Heat Management

MISCELLANEOUS

- Health Issues - Breeding
- Health Issues - Grow-Finish
- Pit Pumping Precautions
- Standard Operating Procedure Template

Site Information Información del sitio	Site Name Nombre del sitio	Premises ID Number (PIN) Número de ID de las instalaciones (PIN)
	Owner/Operator Name Nombre del propietario / operador	Phone Teléfono
	Unit Address (including Emergency 9-1-1 address) Dirección de la unidad (incluida la dirección de emergencia 9-1-1)	
Contacts Contactos	Rescue/Ambulance Rescate / Ambulancia	Fire Department Cuerpo de Bomberos
	Poison Control Centro de Toxicología	Doctor Doctor
	Police/Sheriff Policía / Alguacil	Insurance Seguro
	Hospital Hospital	Other Otro
Disease Contacts Contactos de enfermedades	State Animal Health Official Oficial estatal de sanidad animal	Federal Animal Health Official Oficial federal de sanidad animal
	Veterinarian Veterinario	Other Otro
Manure Spills Derrames de estiércol	State EPA EPA estatal	Earth Moving Movimiento de tierra
	Manure Pumping Bombeo de estiércol	Hauling Transportación
	Equipment Equipo	County Engineer Ingeniero del condado
	Other Otro	
System Failure Falla del sistema	Electricity Electricidad	Plumbing Plomería
	Ventilation Ventilación	Heating Calefacción
	Animal Transport Transporte de animales	Feed Alimento
	Mortality Disposal Eliminación de la mortandad	Other Otro

*A tool to help you develop your personalized emergency action plan can be found at porkcheckoff.org under Farm — Tools
Puede encontrar una herramienta para ayudarlo a desarrollar su plan de acción de emergencia personalizado en porkcheckoff.org bajo Farm (Granja) - Tools
(Herramientas)*

The process of removing manure from below-building storage of swine facilities is a task that requires careful attention to ensure the utmost safety for humans and pigs. Knowing what to expect when handling manure and following recommended removal guidelines can help make this chore safe.

FOLLOW BASIC STEPS FOR IMPROVED SAFETY.

- Remove all workers from buildings before beginning manure agitation. Never enter a building or allow workers to remain in buildings or manure storage when agitating manure.
- Place warning signs at all entrances to buildings and manure-storage areas where manure agitation is taking place so people will not enter.
- Remove all animals from buildings before beginning manure agitation, if possible.
- If removing animals is not possible, begin agitating manure slowly and gradually increase pump speed while observing animals from outside the building. If signs of animal stress are noted, immediately discontinue agitating the manure.
- Do not enter the building until complete ventilation of the building has occurred – at least 30 minutes while maintaining full ventilation – or unless wearing a properly fitting, self-contained breathing unit that you are trained to use.
- Never enter a building or manure storage to rescue a distressed animal or person without wearing a properly fitting self-contained breathing unit that you are trained to use.
- Never enter a manure storage pit or tank unless it is absolutely necessary, and then only if it is well-ventilated and you are wearing a properly fitting self-contained breathing unit that you are trained to use, wearing a properly fitted harness and lifeline and having at least two other people to rescue you in the event of a problem.
- For manure-storage access points, at or below ground-level, install covers or grates in such a way that people or pigs cannot fall into the manure pit/storage.

PROPER VENTILATION IS A KEY SAFETY FACTOR

The greatest manure-related hazard exists almost immediately after vigorous agitation of manure begins due to manure-related gases, but the danger may continue even when there is full ventilation. Follow these guidelines to help avoid unnecessary risks.

- Prior to agitation or pumping, turn off electrical power to any non-ventilation equipment and extinguish any pilot lights or other ignition sources in the building.
- Don't begin agitating stored manure until a sufficient amount of time has passed prior to starting agitation to ensure adequate air movement and exchange.
- For mechanically ventilated buildings, provide the maximum mechanical ventilation possible – all fans in operation prior to beginning and throughout agitation of manure.
- For naturally ventilated buildings, agitate manure only with all side curtains and building openings fully open and when there is a brisk breeze.
- When pumping pits that are close to full, pump without agitation until manure is two feet below the bottom of the floor slats to allow pit fans to perform properly during agitation.
- When agitating manure, keep the jet of pressurized manure below the liquid surface. Do not allow it to strike walls or columns in the pit. Stop agitating when the manure level does not allow agitation below the surface.

KNOW AND RESPECT MANURE-RELATED GASES.

Anyone working around manure should be knowledgeable about the naturally occurring gases that occur in stored manure. Any agitation of liquid manure stored for more than a few weeks will release levels of gases that can be toxic, flammable and potentially lethal. The five main gases of concern are:

1. **HYDROGEN SULFIDE GAS** is released during decomposition and agitation of manure. It is a flammable, poisonous gas that smells like rotten eggs. Hydrogen sulfide is extremely dangerous. If exposed to concentrations of 10 ppm, humans may experience severely irritated eyes, throat and lungs. As the concentration increases (50 to 100 ppm), humans may vomit and suffer from diarrhea. Concentrations above 600 ppm can cause immediate loss of consciousness and death. If animals are constantly exposed to low levels of hydrogen sulfide, it will cause them to become fearful of light, nervous and lose their appetite.
2. **METHANE** is released during decomposition and agitation of manure. It is colorless, odorless and is usually a nontoxic gas. The danger methane poses to humans and animals is when it gathers in amounts large enough to cause oxygen levels to decrease. Explosion is the key risk with methane.
3. **AMMONIA**, another gas released in hog operations, also is released during the decomposition and agitation of manure. Ammonia is a pungent, colorless, noxious gas, easily detected even in small concentrations and can cause respiratory irritation. Over-exposure to ammonia, even in extremely low concentrations, can be detected and identified. In humans, low levels of ammonia can irritate the eyes, throat and lungs. Concentrations of ammonia as low as one-half of one percent (5,000 ppm) can cause suffocation in humans. For hogs, ammonia concentrations at non-lethal levels can cause symptoms such as sneezing, increased salivation and loss of appetite. Chronic exposure can result in increased susceptibility to respiratory diseases.

4. **CARBON MONOXIDE** is released from unvented heaters and gas-powered power washers. Carbon monoxide is hard to detect because it is both colorless and odorless. Carbon monoxide is an extremely toxic gas and can kill humans exposed to high concentrations.



5. **CARBON DIOXIDE** is released during the respiration of animals. It is a heavy, colorless gas that can cause respiratory rates to increase at high levels. Humans will generally have no reactions at low levels. Concentrations of one percent (10,000 ppm) may make some people drowsy. Concentrations of six percent (60,000 ppm) to 10 percent (100,000 ppm) will cause dizziness, headache, visual and hearing dysfunction and unconsciousness within a few minutes to an hour. In animals, a four percent (40,000 ppm) concentration would cause a noticeable increase in respiration rate and could lead to death.

FOR ADDITIONAL INFORMATION ON SAFETY PRACTICES visit the Worker Safety pages located at lms.pork.org/tools.

FOR INFORMATION ON WAYS TO CONTROL EMISSIONS visit the Pork Checkoff funded Air Management Practices Assessment Tool at <https://www.extension.iastate.edu/ampat/>.

TAKEN FROM A 2009 NATIONAL PORK BOARD FACTSHEET.

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