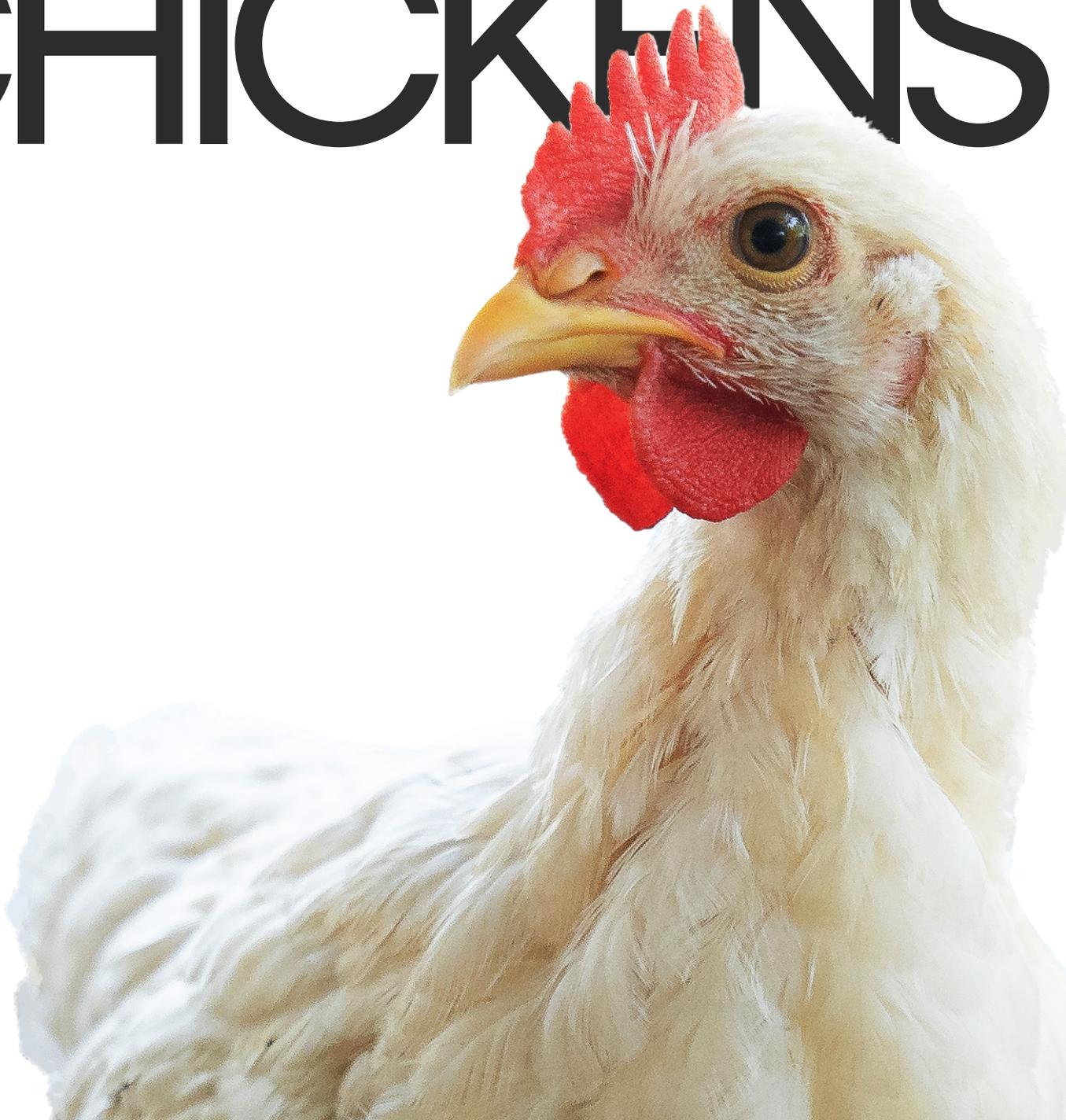


AMERICAN HUMANE FARM PROGRAM
ANIMAL WELFARE STANDARDS

BROILER CHICKENS



AMERICAN HUMANE SOCIETY RESCUE. CARE. PROTECT.

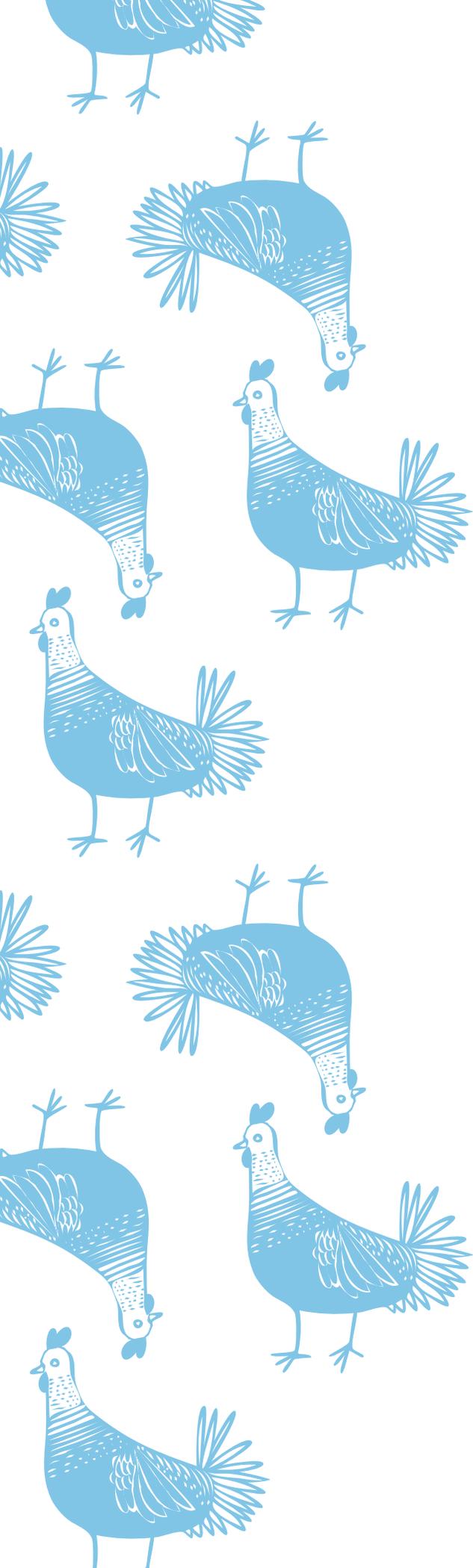


TABLE OF CONTENTS

INTRODUCTION	2
AMERICAN HUMANE™ CERTIFIED DEFINITIONS	3
THE CERTIFICATION PROCESS	6
AUTOMATIC FAILURES	8
FARM GUIDELINES	10
TRANSPORT GUIDELINES	25
PROCESSOR GUIDELINES	28
REFERENCES	37

WWW.HUMANEHEARTLAND.COM

American Humane Certified™ Animal Welfare
Standards for Broiler Chickens

©2024 American Humane - All Rights Reserved

INTRODUCTION

THE PROGRAM IS PREDICATED ON THE PRINCIPLES OF:

- Improving animal welfare for as many lives as possible.
- Ensuring scientific knowledge and expert opinion drives our standards.
- Conveying the commitment of farmers toward excellent welfare and exceeding industry standards with independent third-party verification.
- Differentiating American Humane Certified™ products in the marketplace.

The American Humane Farm Program (American Humane Certified™ Animal Welfare Standards) is the product of over 140 years of applied experience in farm animal welfare. Since its beginning in 1877, American Humane has had a long history with the humane treatment of farm animals. In its work to improve the treatment of working animals and livestock in transit, American Humane has been involved in almost every major advancement in improving the welfare of animals, including an instrumental role in the enactment of the 28 Hour Transportation Law. In 1916, the U.S. Secretary of War asked American Humane to help with the rescue of horses and other animals on the battlefields of World War I. The program that followed became the American Humane Rescue program, which continues to this day to rescue and shelter animals involved in disasters throughout the country.

Given its history, it was natural that American Humane would create the first farm animal welfare audit program. In 2000, American Humane pioneered the first third party audit and certification program in the United States to encourage and support the humane treatment of animals used for food.

Always underpinning the program has been the values of science- and evidence-based standards, transparency, accountability, and verification.

The audit standards, which are a living document, are reviewed and updated by the American Humane Scientific Advisory Committee on a regular basis. This committee of internationally renowned animal scientists and veterinarians advances new science and regularly evaluates the standards to help ensure that the American Humane Certified™ program incorporates the best and current knowledge of humane practices.

AMERICAN HUMANE CERTIFIED™ DEFINITION LIST

COMPANY ANIMAL WELFARE POLICY

Emphasis of the company's commitment to providing an environment which promotes high standards of animal welfare.

"ZERO TOLERANCE" POLICY

Policy that states that kicking, throwing, making loud noises or quick movements to purposefully scare birds and other acts of abuse towards the broilers will not be tolerated and, upon the discretion of the company, these actions are grounds for immediate dismissal.

ANIMAL WELFARE OFFICER

The individual who is responsible for ensuring the implementation of animal welfare policies and for monitoring operations to help ensure that high standards of animal welfare are being provided to the animals.

EMPLOYEE CODE OF CONDUCT

Policy stating that all personnel are expected to handle the broilers in a positive and compassionate manner; Each worker has the responsibility for and is expected to contribute to upholding high standards of animal welfare; Each worker must be cognizant that the basic requirements (feed, water, lighting, ventilation, temperature control, biosecurity) must be provided to the broilers at all times, and a supervisor must be notified if any of these basic necessities are lacking; All personnel have been trained in and have access to an Animal Welfare Incident Report or a similar company document.

FIRE PREVENTION PLAN

Written plan including emergency contact information and numbers; Fire safety training for all employees (such as how to use a fire extinguisher); A plan to protect and house combustible material; A plan to keep combustible materials away from ignition sources; A no-smoking policy; A plan to upkeep and inspect electrical systems; A plan to monitor and control dust accumulation on electrical panels, motors, or other equipment at risk; A plan to regularly clean ventilation fans and heaters.

CHICK

A broiler that is less than or equal to 7 days old.

**“WHISTLE BLOWER”
POLICY**

Policy that protects employees who report animal welfare issues.

**EMERGENCY
RESPONSE PLAN**

Written plan including emergency contact information and numbers; Primary and alternate numbers for at least three responsible farm workers, and a “telephone tree” to help ensure that all responsible parties may be contacted if necessary; Contingency plans and precautions to cope with emergencies in order to safeguard the welfare of the animals, and the procedures to be followed by those discovering an emergency such as fire, floods, storms or other severe weather, interruption of power or water, etc.

LIGHTING PROGRAM

For traditional or non-gradient lighting systems: Light is offered in a uniform intensity and color by electrical lights fixed to the house ceiling. Daily cycle for all chickens 7 days or older through the course of the grow out cycle up to the last week of the grow out period. Within each 24-hour period there must be a minimum continuous period of 8 hours of light that are at least 10 lux (1 foot-candle) at the broiler’s head height and a minimum period of 4 hours of continued darkness that is no more than 1 lux (0.1 foot-candle).

For gradient lighting systems: Intense light (20 lux or higher) is provided just above the height of the broilers (not mounted on the ceiling), on the feedline, with dimmer light (as low as 1 lux) within the rest of the house.

For natural (non-electrical) lighting systems: Natural light is offered from sunlight, uniformly in the absence of electrical light at a level of at least 10 lux (1 foot-candle) at the broiler’s head height.

INJURY

Injury is described as damage severe enough for the formation of granular scar tissue or defective bones or joints, and to an extent significantly greater than would be caused by accidental bumps or scratches.

ANIMAL HEALTH PLAN

Details of the therapeutic use, defined as treatment, prevention and control, as allowed by current laws, of any antibiotics (including ionophores), antiparasitics, and antifungals, which includes the requirements that antibiotics, antiparasitics, and antifungals must only be used therapeutically as prescribed by the flock veterinarian; therapeutic use is in conformance with the latest edition of the FDA Judicious Use of Antimicrobials For Poultry Veterinarians and complies with withdrawal periods.

COMPLETE TREATMENT RECORDS

Records include reason for treatment, date of treatment, quantity of medication used, route of administration, and withdrawal date.

ACTION AND MANAGEMENT PLANS

Procedures to be followed in the event of an outbreak of abnormal behavior, including appropriate and immediate changes in the system of management; Management plans for the prevention of suffering from chronic joint disease or leg deformation, which includes: the monitoring and assessment of daily inspection logs for culls due to leg abnormalities and/or deformities to help ensure that an increasing problem is not developing; Action plans for the mitigation/ prevention of recurring injuries to suggest that there is a common cause and that is attributable to physical features of the environment or handling procedure; The program adopted and followed for the reduction and control of Salmonella, Campylobacter, and other organisms that cause food safety concerns.

VETERINARIAN CLIENT PATIENT RELATIONSHIP (VCPR)

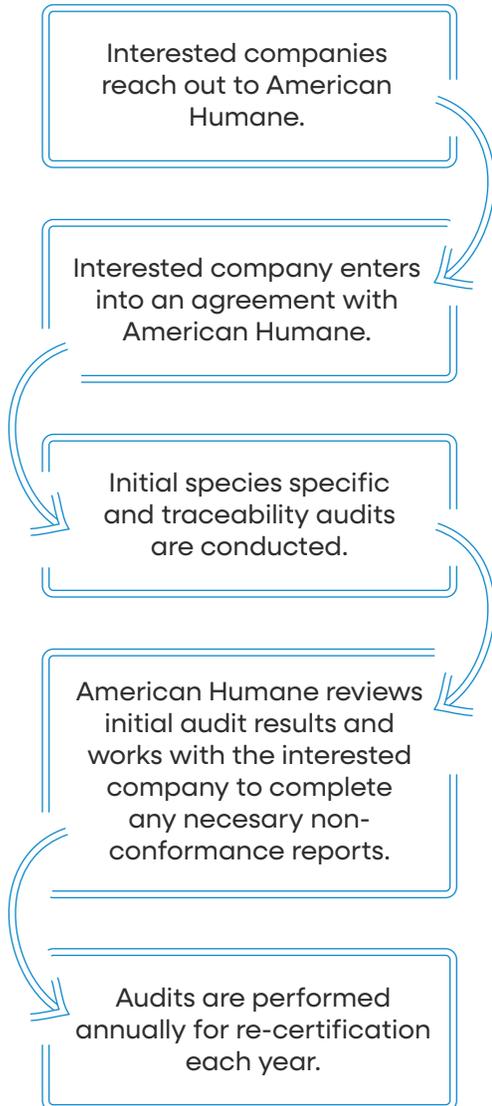
Written proof that there is a dedicated veterinarian who is licensed in the state of operation and familiar with the flock, producer, and has agreed to work with the producer.

ANIMAL WELFARE POLICY

Written procedures with regard to maintaining animal welfare in the processing plant, including responsibilities and duties of staff and emergency procedures and contingency plans.

THE CERTIFICATION PROCESS

FOR COMPANIES THAT ARE INTERESTED IN BECOMING CERTIFIED, THE PROCESS IS AS FOLLOWS:



Before products can bear the American Humane Certified™ mark or label, producers must show their commitment to the welfare of their animals by meeting the American Humane Certified™ Animal Welfare Standards and participating in a comprehensive certification program.

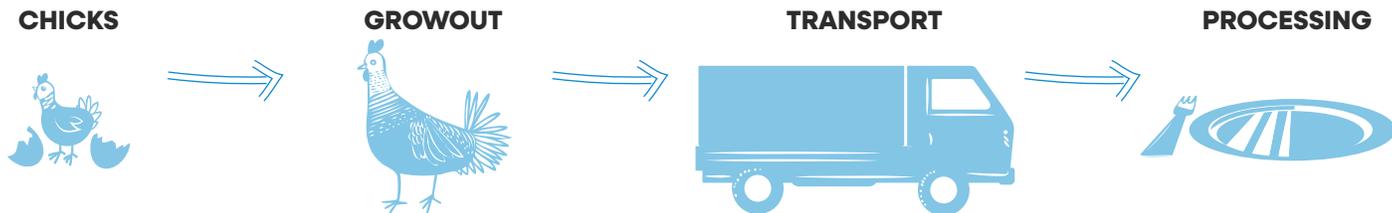
In order to receive permission to use the American Humane Certified™ Certification marks or to make reference to certification status, each producer must (1) agree to comply with all applicable requirements and standards of the American Humane Certification Program, including the relevant Animal Welfare Standards and any applicable Traceability Standards, and (2) successfully complete required third-party audits of its facilities and the facilities of any of its processors to help ensure and verify compliance with the requirements and standards of the American Humane Certification program. Auditors must complete AHC broiler auditor training prior to conducting AHC broiler audits.

American Humane recognizes that there may be other acceptable methods of providing good animal welfare and meeting the intent of each standard. American Humane encourages producers to offer feedback on the standards and to explain reasons why it believes it cannot meet a particular standard, why the standard is not applicable and/or appropriate to its situation, or how the producer has demonstrated good animal welfare outcomes. American Humane may consider specific exceptions to some of the listed requirements where the producer provides sufficient evidence of good animal welfare. Whether to grant an exception is at the sole discretion of American Humane.

SCOPE

The American Humane Certified™ Animal Welfare Standards for Broiler Chickens include measures of animal welfare that are assessed to certify welfare for the full

life of the broiler chicken, including the hatchery, the growout period, transport of the broiler, and humane slaughter and processing.



KEY WELFARE INDICATORS (KWI)

Key welfare indicators (KWI) are defined as factors affecting animal welfare that can be measured, monitored, and managed to assess or improve animal welfare. The KWI measures were selected based on science-based and clear correlations with animal welfare. The KWI are designed to

be outcome-based, inclusive to various types of production, include sampling instructions to help ensure data can be used to improve animal welfare, and able to be used to guide improvements of a specific welfare outcome.

PROCESSOR

- Shackling Score Observations + Records
- Stunning Rate Observations + Records
- Missed Broilers at the Auto Knife Observations + Records
- Broken Wing Rate Observations + Records
- Broken and Bruised Leg Rate Observations + Records

DOCUMENTATION

- Mortality Records
- Cull Records
- Documentation of Daily Broiler Inspection

FARM ENVIRONMENT

- Ammonia
- Litter Squeeze Test
- Records of Regular Gait Scoring
- Gait Score Observations

AUTOMATIC FAILURES

ACTS OF ABUSE OR NEGLECT INCLUDE BUT AREN'T LIMITED TO:

- Hitting or beating a broiler, including forcefully striking a broiler with closed fist, foot, or equipment/object that can cause pain or injury.
- Dragging a conscious broiler.
- Purposefully scaring broilers through verbal or physical stimulation to cause distress or injury.
- Purposefully dropping or throwing broilers.
- Purposefully slamming doors or other equipment on broilers.
- Broilers that are frozen to the floor or side of the trailer.
- Failure to provide food, water, or care that results in significant harm or death to broilers.

AREAS OF AUTOMATIC AUDIT FAILURE:

If any of the following observations are made during the audit process then the audit is an automatic failure and the act must be immediately reported to farm/processor management, the audit company, and American Humane Certified™. Upon informing American Humane Certified™, the audit may be suspended or completed at the discretion of the facility manager, the auditor, and American Humane Certified™, taking time and safety into account when deciding.

1 WILLFUL ACTS OF ABUSE OR NEGLECT (FARM, TRANSPORT, AND PROCESSOR)

There must be no observed acts of abuse or neglect performed by the personnel of the facility being audited. This applies to all broilers present at the facility at the time of the audit. Acts of abuse or neglect are defined as acts outside of normally accepted production practices that intentionally cause pain or suffering.

2 PERFORMING AN UNAPPROVED METHOD OF STUNNING OR EUTHANASIA (FARM, TRANSPORT, AND PROCESSOR)

The facility being audited must only be using American Veterinary Medical Association (AVMA) approved methods of euthanasia for routine culling or for emergency euthanasia for flocks by trained personnel. These methods must be performed promptly to prevent further suffering and must comply with the latest edition of the AVMA Guidelines for the Euthanasia of Animals¹.

THE FOLLOWING ARE APPROVED METHODS OF ON-FARM EUTHANASIA FOR BROILER CHICKENS:

- Cervical dislocation, to be used for euthanizing a very small number of broilers.
- Electrical stunning, immediately followed by neck cutting.
- Captive bolt euthanasia.
- Carbon dioxide, or other suitable gas/ gas mixture, delivered in an appropriate container at acceptable concentrations prescribed by the AVMA.
- Any other method approved by the latest edition of the AVMA Guidelines for the Euthanasia of Animals¹

3 NO LIVE BROILERS IN WASTE DISPOSAL AREAS (FARM, TRANSPORT, AND PROCESSOR)

For all waste disposal areas, there must be no live broilers present.

4 NO LIVE BROILERS IN TRAILERS THAT HAVE ALREADY BEEN UNLOADED AND ARE OTHERWISE EMPTY (FARM, TRANSPORT, AND PROCESSOR)

After broilers have been unloaded from transport modules from the transport trailer, there must be no live broilers left behind on the empty, unloaded trailer. When an empty or unloaded trailer arrives at the farm for loading of broilers for transport, there must not be any live broilers on the otherwise empty trailer.

5 NO LIVE BROILERS IN THE DOA BIN (PROCESSOR)

While unloading broilers from transport modules, the dead-on-arrival (DOA) broilers can be placed into a separate bin or holding container. There must not be any live broilers put into this bin or container.

6 NO LIVE BROILERS ENTERING THE SCALDER (PROCESSOR)

While moving through the processing line, the broilers will eventually move into the scalding tank. Before entering the scalding tank, the broilers must have been stunned, bled, and checked that they are in fact truly not live through methodologies provided in the standards. Thus, there must be no live broilers entering the scalding tank.

FARM GUIDELINES

OFFICE RECORDS AND STANDARD OPERATING PROCEDURES

The Office Records and Standard Operating Procedures (SOP) section outlines the records, SOPs, and documentation that must be made available to the auditor at the time of the audit. These are to be maintained in the form of a Farm Manual and easily assessable to both staff and the auditor. Farm records must be maintained for a minimum of one year, unless otherwise required to be kept longer (e.g. in the case of Veterinary Feed Directives, which are required by the U.S. Food and Drug Administration to be kept for two years).

One of the best ways to prepare for an external audit is to do an internal, practice

audit. Performing an internal audit can be the most effective way to find areas of non-compliance before the actual audit, raise any questions that one might need answers to, or allow for clarification of the standards. For that reason, each American Humane Certified™ site must perform and maintain records of an internal audit completed for each facility at least once every three years. The internal audit must be performed using a broiler chicken welfare audit tool, such as but not limited to American Humane Certified™ Animal Welfare Audit for Broiler Chickens or National Chicken Council Animal Welfare Audit Checklist for Broilers².

There must be a company policy clearly detailing and outlining the expectations of the animal caretakers regarding animal care that each caretaker must review and sign indicating that they understand.

THE COMPANY ANIMAL WELFARE POLICY MUST INCLUDE:

- Emphasis of the company's commitment to providing an environment which promotes high standards of animal welfare.
- The company has implemented an animal welfare "whistle blower" policy that protects employees who report animal welfare issues.
- The company has implemented a "zero-tolerance" policy which states that kicking, throwing, making loud noises or quick movements to purposefully scare birds and other acts of abuse towards the broilers will not be tolerated and, upon the discretion of the company, these actions are grounds for immediate dismissal.

Each company must also have an Employee Code of Conduct policy available to workers in a language they can understand, and each worker must be trained in this policy.

THE EMPLOYEE CODE OF CONDUCT POLICY MUST INCLUDE:

- All personnel are expected to always handle the broilers in a positive and compassionate manner.
- In addition to the worker's assigned duties, each also must be cognizant that the basic requirements such as adequate feed, water, lighting, ventilation, temperature control, and biosecurity must always be provided to the broilers, and a supervisor must be notified if any of these basic necessities are lacking.
- All personnel have access to the Animal Welfare Incident Report or a similar company document. Personnel are instructed to complete and submit this document whenever they observe incidences related to animal welfare that cause them concern.
- Each worker has the responsibility for and is expected to contribute to upholding high standards of animal welfare at all times as they perform their own duties.

Each farm must have at least one designated Animal Welfare Officer (AWO). The AWO is the individual who is responsible for helping to ensure the implementation of animal welfare policies and for monitoring operations to help ensure that high standards of animal welfare are always provided. The name of this person must be provided and recorded at the time of the audit.

Farms must keep up to date SOP that are regularly updated and available in written or electronic form to all workers in a language

they can understand relating to daily, weekly, and monthly activities and procedures involving animal care or the upkeep of facilities. Having access to written SOP can be helpful for training purposes, addressing questions about how a task is performed, and uniformity of task completion to continuously improve animal welfare. Each animal caretaker must indicate that they have been presented this material and that they understand it by signing a document declaring the previous statement.

AT A MINIMUM THE SOPS MUST INCLUDE:

- Performing and recording twice daily inspections of all broilers and facilities.
- Daily inspections of equipment, routine maintenance and cleaning, and back-up protocols, as well as records of each.
- Daily monitoring and recording of maximum and minimum house temperatures (unless automatically recorded) with personnel initials.
- Monitoring and recording of ventilation settings/ rates, any necessary adjustments, and periodic ammonia levels measures (twice per flock).
- Checking facilities for structural soundness before flock placement.
- Maintenance and management of litter.
- Maintenance and testing of auxiliary power supply.
- Maintenance and testing of alarm systems.
- Maintenance and testing of automatic ventilation systems.
- A copy of the current American Humane Certified™ Animal Welfare Standards for Broiler Chickens.
- Workers must sign and date that they understand and have been provided copies of the SOPs that are relevant to their assigned duties.
- Chick placement, housing, and handling.

If an outside company is used for other processes such as chick acquisition, transport, loading, processing, etc., auditors

must verify this process by observing the practices being conducted. If this is not a viable option for the site, then the

company must show documentation that the individuals are properly trained in these areas. This can be accomplished through training documents, employee interviews, and/or a Certificate of Conformances. A Certificate of Conformance (COC) is a document signed or otherwise authenticated by an individual certifying the degree to which terms or services meet specified requirements.

In the case of an emergency, there must be a written or electronic emergency response plan that includes important contact numbers and contingency plans that employees can follow and utilize under such conditions. The emergency response plan must be posted in the main office and in each of the houses to help ensure animal caretakers have ample access to it.

SPECIFICALLY, THE EMERGENCY RESPONSE PLAN MUST INCLUDE:

- Emergency contact information and numbers, i.e. fire department, local utilities, etc.
- Primary and alternate numbers for at least three responsible farm workers, and a “telephone tree” to help ensure that all responsible parties may be contacted if necessary.
- Contingency plans and precautions to cope with emergencies in order to safeguard the welfare of the animals, and the procedures to be followed by those discovering an emergency such as fire, floods, storms or other severe weather, interruption of power or water, etc.

There must be a written or electronic fire prevention plan specific to the farm that includes important preventative steps,

emergency action, and contingency plans that employees follow under such conditions.

THE FIRE PREVENTION PLAN MUST INCLUDE:

- Fire safety training for all employees (such as how to use a fire extinguisher).
- A plan to protect and house combustible material.
- A plan to keep combustible materials away from ignition source.
- A no-smoking policy.
- A plan to upkeep and inspect electrical systems.
- A plan to monitor and control dust accumulation on electrical panels, motors, or other equipment at risk.
- A plan to regularly clean ventilation fans and heaters.

Animal production and building environment records must be maintained to help ensure that animal welfare is maintained over numerous broiler production cycles. Building environment records must be available at the time of the audit for each flock and include at

a minimum: total available floor area, total number of broilers placed, and total number of waterers and feeders. These records for the current flock (at the time of the audit) may be provided in the form of the Farm Data Sheet.

NUTRITION

Broilers must be free from unnecessary hunger, thirst, and malnutrition by being provided a nutritionally balanced diet and continuous access to fresh water (except for catching periods) to maintain their full health and promote a positive state of well-being. Feed and water must also be distributed in a manner that allows the broilers to eat and drink without undue competition. To help ensure broilers have ample access to food and water, availability of each must be checked daily and water flow rates must be checked weekly.

The diet(s) being offered to broilers must be balanced by a qualified nutritionist to meet or exceed National Research Council (NRC) guidelines and adequate fresh, clean water must be available, unless indicated by the flock veterinarian. Growth promoters, in-feed antibiotics, and anti-parasitics should not be provided in the ration (except ionophores and coccidiostats), unless indicated by the flock veterinarian. Records of the feed mills mixing the diet and records of all ingredients that were used must be kept for at least one year to track the source of diet ingredients in case of contamination or other issue.

The number of broilers per feeder and waterer must be less than or equal to the maximum number specified by the equipment manufacturer through their documentation. Supplementary feed must be provided for chicks during their first week to help chicks find feed and adjust to the permanent feeders³, unless otherwise specified by the feed equipment manufacturer and documented by the producer. Food must be fresh and not left in a contaminated (i.e. moldy, wet, soiled with rodent feces, etc.) or stale condition.

There must be on-site provisions to provide clean water for at least 24 hours during a shut-off or failure. Waterers should be of an appropriate design and placed at an appropriate height for the size and age of the broilers to reduce any water spillage and prevent problems with litter management.

At the time of the audit, no more than 10% of tested waterers can be inoperable. The auditor should randomly select at least 10 waterers that represent all water lines and multiple parts of the barn to be tested. For example, the auditor should select a few waterers on each water line and a few waterers in each section of the house for testing. No more than 1 of the waterers can be inoperable at the time of the audit if 10 are tested.

LIGHTING

An appropriate amount and intensity of light is an important part of the environment for broilers and must also be managed to maximize broiler comfort. The lighting program can affect growth performance, muscle development, leg abnormalities, and broiler behavior³. Light intensity is an important aspect of the lighting plan, as low intensity lighting has been found to lead to blindness³. The specific lighting program

used for the chicks must be recorded by the producer, but specifics are not dictated by these standards. It is recommended that light levels be increased during the first week to help the chicks locate the feed and water, and that for the first day, light is provided for 24 hours; for each day thereafter, an increase of 1 hour of darkness is recommended until 4 hours of darkness is reached on the fourth day.

The following specifications apply to houses utilizing a traditional lighting system, where

lights are fixed to the ceiling and light is offered in a uniform intensity and color throughout the house, and to houses utilizing natural light or sunlight, where electric sourced light is not used. For broilers 7 days or older, the lighting program must provide, within each 24-hour period, a minimum continuous period of 8 hours of daytime light. The daytime light illumination must be an average minimum of 10 lux (1 foot-candle) throughout the house at the head height of the broilers⁴, excluding areas in the shade of equipment. Supplemental lighting, where provided, should be uniformly distributed. There also must be a minimum period of 4 hours of continual darkness or the natural period of darkness, if less. The 'dark' period is recommended to be no more than 1 lux (0.1 foot-candle) in intensity.

Light may be offered in a gradient lighting system, also referred to as line lighting, dual

light intensity, or variable lighting. Gradient lighting systems are characterized by intense illumination (20 lux or higher) being provided at just above the height of the broilers, commonly on the feedline, with dimmer light (as low as 1 lux) throughout the rest of the house. Offering bright light has been reported to improve comfort and rhythmic behavior of broilers⁵. Gradient lighting has been reported to increase expression of natural behaviors, physical activity, improve beneficial expression of brain welfare genes, and improve hepatic metabolism^{6,7}.

For broilers 7 days or older, the lighting program must still provide, within each 24-hour period, a minimum continuous period of 8 hours of daytime light and a minimum period of 4 hours of continual darkness or the natural period of darkness.

Non-Gradient or Traditional Lighting Systems

The lighting system must provide an average minimum illumination of 10 lux (1 foot-candle) sampled at the height of the broilers. The auditor must assess illumination at the height of the broilers at 4 locations within the broiler house that represent the entire house. Full points are to be awarded if the average illumination is at least 10 lux (1 foot-candle). The locations are specified as follows:

$$\left(\frac{\text{UNDER LIGHT}}{\text{UNDER LIGHT}} + \frac{\text{BETWEEN LIGHTS}}{\text{BETWEEN LIGHTS}} + \frac{\text{UNDER LIGHT}}{\text{UNDER LIGHT}} + \frac{\text{BETWEEN LIGHTS}}{\text{BETWEEN LIGHTS}} \right) / 4 = \underline{\hspace{2cm}}$$

Gradient/Line/Variable Lighting Systems

The lighting system must provide high intensity lighting at the feedline (≥ 20 lux or 2 foot-candles) and low intensity light throughout the barn. The auditor must assess illumination at the height of the broilers at 4 locations within the broiler house. Full points are to be awarded if the facility is using a gradient/line/variable lighting system as defined in the American Humane Certified™ Broiler Chickens Welfare Standards. Full points are to be awarded if the high intensity locations are at least 20 lux or 2 foot-candles. The locations are specified as follows:

$$\frac{\text{HIGH INTENSITY}}{\text{HIGH INTENSITY}} + \frac{\text{HIGH INTENSITY}}{\text{HIGH INTENSITY}} + \frac{\text{LOW INTENSITY}}{\text{LOW INTENSITY}} + \frac{\text{LOW INTENSITY}}{\text{LOW INTENSITY}}$$

Sunlight or Natural Lighting Systems

The lighting system must provide an average minimum illumination of 10 lux (1 foot-candle) sampled at the height of the broilers. The auditor must assess illumination at the height of the broilers at 4 random locations within the broiler house and record the values below. Full points are to be awarded if the average illumination is at least 10 lux (1 foot-candle).

$$\left(\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \right) / 4 = \underline{\hspace{2cm}}$$

Circle the unit measures were taken in: **LUX** or **FOOT-CANDLE**
 Broilers being assessed are how many weeks old?

ANIMAL HEALTH PLAN

The Animal Health Plan (AHP) should be an integrated plan constructed with the flock veterinarian to prevent, control, and treat disease in the flock as well as monitor flock performance as an indicator of broiler health and welfare. The plan should include detailed procedures to prevent, control, and treat disease, benchmarks that guide

when the veterinarian needs to investigate a health or welfare concern, and health or treatment records that must be kept to evaluate past experience.

NOTE: Treatment must never be withheld to maintain an antibiotic-free production policy. Broilers must be given appropriate treatment, including antibiotics, if prescribed by the flock veterinarian, regardless of antibiotic-free production policy.

THE ANIMAL HEALTH PLAN MUST INCLUDE:

- Documentation that the AHP has been developed in consultation with the flock veterinarian who is licensed in the state of operation and reviewed annually.
- Documentation that broilers are not toe trimmed/treated, beak trimmed/treated, or dubbed, unless therapeutic beak trimming/treatment is required by the flock veterinarian to reduce problems with feather pecking.
- Vaccination protocols and complete vaccination records (vaccine, date, and route of administration).
- Records of any flock abnormal behaviors, incidence of injury, or disease
- Treatment protocols and complete treatment records (type and amount of drug(s), date, route of administration, reason, withdrawal date).
- Documentation that therapeutic use of antimicrobials is in conformance with the latest edition of the FDA Judicious Use of Antimicrobials For Poultry Veterinarians⁸, and complies with flock veterinarian and withdrawal periods.
- Documentation that therapeutic use of antiparasitic agents and antifungals complies with flock veterinarian and withdrawal periods.
- Records of any surgical procedures.

Specific broiler performance benchmarks will be outlined in the flock performance parameter portion of the AHP, which outlines how a healthy flock is expected to perform and can help to identify if there is a health or welfare concern. Flock

performance parameter tolerance levels must be defined by the farm or company with the flock veterinarian and monitored for indicators of disease or production disorders. These benchmarks must be regularly measured and documented.

SPECIFICALLY, THE PERFORMANCE PARAMETER PLAN MUST INCLUDE:

- Tolerance levels must be defined for: body weight projections, feed and water consumption, flock mortality percent, and flock culling percent.
- If the mortality level within a house exceeds 1.5% in 24 hours after day 7 of placement, a veterinary investigation must be made to determine the cause and if necessary to remedy the problem.
- If any flock performance parameters fall below the tolerance levels, the flock veterinarian or properly trained personnel must be informed, and a program of action must be developed to remedy the problem.



Records of animal production must be kept by each farm to help ensure that animal movements are accounted for and that production-related measures of good animal health (i.e., mortality and culls) are being monitored and met for each flock. Production records must also include proof that daily house temperatures are being checked and recorded and that broilers are inspected twice daily by trained personnel. Daily observation of broilers is imperative to provide a gauge for their well-being.

Records must be kept for at least one year of gait scoring, performed by the farm for each flock in the last two weeks of that flock cycle. Records must show that each flock had gait score measures within the American Humane Certified™ stated tolerance level (no more than 5 birds with gait score of 2). Where records show that more than 5 broilers had a gait score of 2, there must be documentation available of the corrective actions taken by the producer to improve gait scores for subsequent flocks.

The AHP should include Action and Management Plan that outline how to respond to a disease outbreak, high occurrence of physical defects, or abnormal behavior displays by the majority of the flock. The flock veterinarian must also be involved in putting together the Action and Management Plan, and advise the producer when intervention is needed.

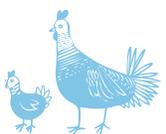
SPECIFICALLY, THE ACTION AND MANAGEMENT PLAN MUST INCLUDE:

- Action plans to remedy any problems which cause animal performance parameters to fall below tolerance limits.
- Procedures to be followed in the event of an outbreak of abnormal behavior, including appropriate and immediate changes in the system of management, with records kept.
- Management plans for the prevention of suffering from chronic joint disease or leg deformation, which includes:
 - The monitoring and assessment of daily inspection logs for culls due to leg abnormalities and/or deformities to help ensure that an increasing problem is not developing, and where found.
- Recommendations and guidance from the flock veterinarian to alleviate/ prevent such instances.
- Monitoring plans for eye conditions, which includes courses of action for the mitigation of eye problems.
- Action plans for the mitigation/ prevention of recurring injuries seen in a number of broilers to suggest that there is a common cause and that is attributable to physical features of the environment or handling procedure.
- The program adopted and followed for the reduction and control of Salmonella, Campylobacter, and other organisms that cause food safety concerns.

WRITTEN EUTHANASIA POLICY

The Euthanasia Policy must be developed with the flock veterinarian who is licensed in the state of operation and include

provisions for routine euthanasia (culls), end-of-flock euthanasia, and emergency euthanasia (including mass disposal during disease outbreaks, such as for highly pathogenic Avian Influenza). Euthanasia should only be performed by properly trained (with documentation) personnel or the flock veterinarian.



THE EUTHANASIA POLICY MUST INCLUDE:

- A statement declaring that trained farm personnel or the flock veterinarian are permitted to perform euthanasia.
- Training records which identify: the names of the stockpersons who have undergone training, the name of the trainer, the specific method(s) of euthanasia covered in the training, confirmation that the trainees' competence in performing the procedure was validated by the trainer, including proper techniques and proper use of any equipment, and the date(s) that the training occurred.
- Training must include a hands-on portion with an associated record outlined above.
- For euthanasia equipment, at least one year of documentation that equipment has been maintained per the manufacturer's recommendations and that it is stored securely, but available when needed.
- Euthanasia must be performed promptly to prevent further suffering and methods must comply with the latest edition of the American Veterinary Medical Association's Guidelines for the Euthanasia of Animals¹.
- Procedures stating that the persons performing euthanasia must verify that each broiler has been properly euthanized. If it is not properly euthanized on the first attempt the same method or an alternate method is performed immediately to help ensure that the broiler does not suffer.
- For situations other than routine culls, logs stating the reason for euthanasia, numbers of animals euthanized, the date, and the procedure used.

Only AVMA approved methods of euthanasia are permitted; methods must be performed promptly to prevent any further suffering and comply with the latest edition of the American Veterinary

Medical Association's AVMA Guidelines for the Euthanasia of Animals. Any euthanasia equipment must be maintained per the manufacturer's guidelines and must be stored securely and clean.

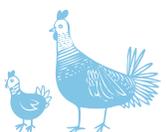
AVMA APPROVED EUTHANASIA METHODS INCLUDE:

- Cervical dislocation, to be used in an emergency. Cervical dislocation involves stretching the neck to dislocate the first vertebrae in the neck from the skull and cause extensive damage to the major blood vessels. Use of equipment that crushes the neck rather than dislocates the spine, such as pliers, is never acceptable practice.
- Electrical stunning, immediately followed by neck cutting.
- Captive bolt euthanasia.
- Carbon dioxide, or other suitable gas/ gas mixture, delivered in an appropriate container at acceptable concentrations.
- Any other method approved by the latest edition of the AVMA Guidelines for the Euthanasia of Animals¹.

Following, the person performing the euthanasia must verify that each animal has been properly euthanized. If necessary, the same or an alternate method must be performed immediately to help ensure

that the animal does not suffer. All culls and euthanasia actions must be documented with the date, number of broilers affected, and reason(s) where known.

Nothing stated here is intended to discourage the prompt diagnosis and appropriate treatment of any ill or injured broiler.



BIOSECURITY

Biosecurity refers to an established plan put together by the producer to minimize introduction and spread of any pathogens to prevent and control disease outbreak in the flock. There are multiple components to a complete biosecurity plan for broilers, typically including structural access, operational access, a cleaning and sanitation plan, and a waste disposal plan.

The structural access plan will limit introduction of pathogens from entering the physical farm, houses, or other buildings by physically limiting access to these areas by humans and animals, posting signage to deter any unwanted visitors, and tracking all allowed visitors to the premises with a visitor log.

Specifically, the structural biosecurity access must be maintained by:

- Signs posted at the farm and/or house entrances that provide instructions and information regarding biosecurity procedures
- Exclusion of dogs and other animals from the houses
- Log of approved visitors with names and dates
- A physical method that excludes any unapproved visitors from entering the houses
- Perimeter fencing, overhead netting in yards (where there is outside access for broilers), screening of drains/vents/ openings, or other physical methods for exclusion of pests, predators, and wild birds.

The operational plan focuses more so on the inside of the operation and includes pest management (no overgrown areas, no spilled feed, using a pest control plan, equipment and facility cleaning schedules, and any personal protective wear that the animal caretakers should be wearing when inside the operation or around broilers).

Specifically, the operational biosecurity plan must be maintained as follows:

- The vegetation adjacent to surrounding buildings in outdoor areas are kept short and tidy within at least 24” of the house
- Evidence of pest control methods, such as baiting and trapping
- Bulk feed and emergency water sources are covered and protected, and other potential attractants of pests, rodents, mold, etc. are removed (i.e. open trash cans with food waste or other items not necessary to the operation of the house)
- The provision of protective clothing, foot baths, and/or shower facilities, where appropriate.

The cleaning and sanitation plan will largely apply to the operational biosecurity plan and provide directions on how equipment and facilities should be cleaned and sanitized to prevent pathogen spread.

The waste disposal plan outlines detailed protocols for the safe and proper disposal of any medical waste, sharps, carcasses, and other waste that poses a threat to animal and human health and safety.

LITTER

Litter quality has been reported to affect animal welfare by contributing to footpad

dermatitis and other lameness issues^{9,10}. To prevent bacterial buildup, footpad dermatitis, foot injury, and pest infestation³, broilers must be raised on litter floors and litter must be kept dry and at an appropriate

thickness level. To prevent discomfort and promote a healthy environment, the dry litter should be at least 2 inches thick and stocked with absorbent material of an appropriate particle size (less than 1 inch). Litter must also not be caked with feces or water beyond 2 feet of feeders and drinkers. The litter must be dry enough that if it was squeezed, no free water would

be released, and the litter would not form into a clump. The producer must keep and provide records of regular litter moisture testing conducted at least twice per flock. During the audit, the auditor must test litter moisture in 6 locations: 2 in the first third within the inhabited portion of the house, 2 in the middle third of the house, and 2 in the final third of the house.

PERSONNEL TRAINING

A high degree of caring and responsible management and husbandry is vital to help ensure good animal welfare. Managers and stockpersons must be thoroughly trained, skilled, and competent in animal husbandry and welfare. They must have a good working knowledge of their system and the broilers under their care. The continuing education of personnel who have day-to-day contact with the broilers is one of the most important ways to help ensure behaviors that support and promote animal welfare. It is important to have documentation confirming personnel training in aspects of flock welfare appropriate to the level of operation (videos, manuals, SOPs).

The early and continuing education of personnel who have day-to-day contact with the broilers is one of the most important ways to promote behaviors that support and foster animal welfare. All broiler caretakers should be trained before any hands-on contact with the broilers. All stockpersons must be trained at orientation in a language that each worker can understand, and training must be updated annually. Training may include videos, manuals, and/or SOPs, but must include hands-on experience and evaluations. Training records must clearly define what each stockperson has been trained in, as well as signatures of the trainer, the trainee, and the date of each training.

AT A MINIMUM, ALL STOCKPERSONS SHOULD BE TRAINED IN THE FOLLOWING:

- Normal and abnormal (including stress and fear) behavior of broilers to recognize the signs that indicate good or poor health and welfare.
- Proper low-stress broiler handling.
- Physical and environmental requirements for broilers.
- Signs of common diseases and appropriate actions for treatment.
- Factors that affect litter condition and how to identify welfare problems associated with poor litter management.
- Training of the emergency response plan.

There may be some responsibilities that require the caretaker to have additional or specialized training to complete a task that has the potential to cause injury to the

broiler. For those tasks, the caretaker must again have documentation of specialized training that is updated annually.

SOME EXAMPLES OF SAID TRAINING INCLUDE:

- Identifying broilers that need to be treated/culled/euthanized.
- Recognizing unusual conditions or behaviors and identifying an action management plan.
- Treating or tending to sick or injured broilers.
- Care and management of newborn chicks in the brooder area.
- Proficiency in and ability to practice approved techniques for humane euthanasia.
- Use of any equipment on which the broilers depend, including competent operation, routine maintenance, recognizing common signs of malfunction, and any actions needed in the event of failures.

Even if the stockperson is not directly employed at the operation, if they are in contact with the broilers then there must be adequate documentation of training. For example, catching crews or processing crews will typically not directly work for the producer but will still be responsible for handling and transporting

the broilers. Those crews need to be trained in normal broiler behavior, broiler handling and restraint, proper operation and maintenance of equipment they will use, and proper transportation practices of broilers (where applicable). Training must be validated through employee documents and/or Certificates of Conformance.

EXTERIOR ACCESS

The American Humane Certified™ Animal Welfare Standards for Broiler Chickens do not require that broilers have access to the outdoors. Where they do, specific guidelines must be met.

Exterior access can be greatly beneficial for the overall welfare of the broiler, but outside access alone with no other protocols has the potential to be detrimental to the broiler; thus, the following recommendations are made to improve animal welfare while offering outdoor access. While the broilers have exterior access an animal caretaker must be checking on the broilers at least twice a day, must be providing cover for shade and from predators, and broilers should be returned and locked in at night. The exterior access must be an appropriate size for the flock population that allows for effective management and maintenance of the ground. The access points in the barn for the broilers to access

the outside area should be large enough that broilers will not get stuck or clumped, being at least 1.5 feet high and 2 feet wide to avoid piling or risk of injury.

Some exterior areas may utilize living vegetation for cover or have soft ground that could be easily made muddy or be damaged. In those scenarios, producers must actively maintain the living cover and allow to regrow as needed, manage any damaged or sodden ground, and have a plan to mitigate or limit pathogen introduction and buildup. Exterior access to shade should be large enough for broilers to spread out to cool off.

If the producer is using a mobile housing unit, the producer must have a plan and schedule for rotation of the house, permanent housing, and a land management plan that will address sodden or damaged ground, prevent pathogen introduction and buildup, and management of cover for shade and predator protection.

INSPECTION OF BUILDINGS

The actual buildings that the broilers are housed in must be safe and clean to promote animal welfare. The physical environment must take into consideration the safety of the animals, such that there must be no sharp edges, projections, protrusions, damaged tiers, etc. that are likely to cause injury or distress to the broilers. Electrical equipment must be inaccessible to the broilers, well-insulated and properly grounded, and safeguarded

from rodents. Except for insecticidal preservatives, the broilers must have no possibility to come into contact with paints, wood preservatives, disinfectants, or other toxins.

Housing and equipment must be designed so that the broilers can be readily inspected during daily observations. The house design must allow effective cleaning to prevent the significant buildup of parasites and other pathogens. Internal walls must be smooth and constructed of a durable material capable of withstanding cleanout procedures.

INSPECTION OF EQUIPMENT

Manual or automatic equipment needs to be in working order to provide a healthy environment that promotes animal welfare, such as waterers, feeders, and ventilation fans. This equipment must be inspected daily, and caretakers should perform routine maintenance as necessary. If there is a defect with any of the listed equipment, steps must be taken immediately to repair the equipment and records must be kept documenting the defect, the details of how the default was repaired, and any other actions needed during the repair to help ensure good animal welfare.

Some equipment should be inspected more regularly. Where used, an auxiliary power supply (such as a standby generator) must be tested under load weekly, and the outcome must be documented to help ensure backup power is available if needed. Similarly, where used, alarm systems for controlled environment houses must be tested weekly and the outcome must be recorded to help ensure if there is an equipment malfunction

within one of the houses, the appropriate personnel are alerted immediately and can take proper action.

Proper ventilation is required to remove dust, moisture, carbon monoxide and carbon dioxide, and provide oxygen³. For all houses, proper ventilation is required to maintain a comfortable temperature and to maintain good air quality. For that reason, caretakers need to check the house temperature twice daily, closely monitor ventilation equipment, and be cognizant of air quality while in the house.

Another aspect of maintaining good air quality is to monitor ammonia levels within the house. Ammonia levels must be measured at least twice per flock, once at chick placement and once prior to house depopulation, at the height of the broilers. Ammonia levels should be less than 10 ppm and are not to exceed 25 ppm³ and if they do, there needs to be an ammonia mitigation plan in place to decrease levels. During the audit, the auditor must measure ammonia at the height of the broilers in 3 locations, in the first third, second third, and last third of the house.

SPACE ALLOWANCE

Appropriate stocking density is an important part of broiler welfare to help ensure the broilers are comfortable within

the house. For that reason, the maximum stocking density allowed is 7.0 pounds of broiler weight per square foot¹¹ (34 kilograms per square meter). Unless it can be demonstrated that, at a higher stocking density, all of the following are achieved:

AT A HIGHER STOCKING DENSITY, ALL OF THE FOLLOWING ARE ACHIEVED:

- Flock growth rates, both during the last week of the growth period and cumulatively, are within the tolerance limits in the Performance Parameter Plan.
- The percentage of mortalities and culls, both during the last week of the growth period and cumulatively, are within the tolerance limits in the Performance Parameter Plan.
- The American Humane standards for gait score, distribution, ammonia levels, and litter quality squeeze test are met.
- The target stocking density does not exceed 8.2 pounds of broiler weight per square foot (40 kg per square meter)¹².

This is not in reference to the final broiler weight, but the allowed level to stock the broilers in their house. At all times broilers

should be able to lay down, stand up, spread their wings, and move freely throughout the house.

ENVIRONMENTAL ENRICHMENT

Environmental enrichment can be greatly beneficial to animal welfare by reducing

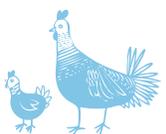
aggressive behaviors, decreasing boredom, and allowing for freedom to express normal behaviors³. In broilers, it has been suggested that providing environmental enrichment can reduce welfare problems¹³.

ENVIRONMENTAL ENRICHMENTS ARE PROVIDED WITH THE PURPOSE OF:

- Increasing the occurrence and range of the normal behavior.
- Preventing the development of abnormal behavior, or reducing its extent and complexity.
- Increasing positive exploration of the environment.
- Increasing the animal's ability to handle behavior and physiological challenges¹³.

There must be at least one environmental enrichment option within the houses. Options for environmental enrichment include

elevated resting places (platforms, boxes, ramps, A-frames, etc.), foraging enrichment (straw bales, hanging edible items, outdoor



foraging, etc.), outdoor access, or gradient lighting⁷. For outdoor access to be used as enrichment, daily records must show that the number of individual days for which it was necessary to secure the broilers indoors did

not exceed 21 days in total. These enrichments must be present in quantity and distribution to allow broilers to use them freely. During the audit the auditor must record the type(s) of enrichment used and how many are offered.

INSPECTION OF CHICKS

Chicks must be sourced from a location which meets the requirements of the American Humane Certified™ Animal Welfare Standards for Hatcheries. This is documented through the American Humane Certified™ certification of an on-site hatchery, or through certification or a Certificate of Conformance from an outside hatchery.

A chick is defined as a broiler less than or equal to 7 days old. Chicks do not need to be observed on each broiler site, but where chicks are present, the following auditor observation guidelines must be met. For farms that also house chicks, some considerations must be made to maintain good animal welfare. All other parts of the standards and audit tool also apply to chicks, but there are some additional considerations to be taken for young broilers.

Chicks should always be handled with care, specifically they should not be dropped from heights of more than 12 inches to prevent possible injury. For day old chicks, they should be handled with extra care as to not risk injury and housed in a comfortable environment, such that temperature is regulated, emission of noxious gases is monitored, and chicks have ample room to move around the enclosure freely. During their first week, chick must have access to supplemental feed, unless otherwise specified by the feed equipment manufacturer and documented by the producer.

Brooder area design must allow chicks to move freely towards or away from the brooder. The behavior of the chicks must be closely monitored throughout the brooding period and the brooders adjusted accordingly. (i.e. when all of the chicks are huddled, it is too cold; when all are at the perimeter of the brooder, it is too hot; when all are clustered to one side, it is too drafty).

INSPECTION OF BROILERS

The stockperson performing the inspection of broilers must proceed in a careful, deliberate manner to avoid frightening the broilers unnecessarily (i.e. by making loud noises, sudden movements, etc.) and they must follow a path that allows them to see all broilers in the house. During inspections or at any other time, if any broiler is found

to be in severe pain or is suffering from severe sickness or injury, then the broiler must be immediately euthanized by trained personnel. If at any point during on-site broiler observation the broilers show piling behaviors or signs of stress or fear, the auditor is to stop observation and take necessary steps to alleviate stress on the broilers.

Transect walks should be utilized to inspect the broilers within the house. There are a few steps to completing an effective transect walk. First, identify the transect

sampling path within the house being evaluated. To identify the sampling path, use the feeder and drinker lines to divide the house into paths. If there are no feeder or water paths, then adjust the house into arm-span paths, using your extended arms to estimate a path. Randomly select the path to be walked within the house, such that the path is different from the back of the barn to the front of the barn. Walk this path from the front to the back of the barn, and back in a different area. While walking this path, observe the flock for specific measures described below.

OUTCOME-BASED ANIMAL MEASURES ON FARM

Broilers exposed to high environmental temperatures typically modify their

behavior and physiology in an attempt to reduce body temperature. Broilers subjected to high temperatures typically show decreased activity patterns, increased indicators of stress, and decreased feed intake. These broilers are often identified by panting and keeping their wings drooped and lifted slightly from the body to maximize heat loss^{14,15}. Because these broilers are likely experiencing poor welfare, efforts should be made to maximize heat loss for the broilers and lower ambient temperature of the broiler house. At the time of the audit, no more than a quarter of the house, as visually observed by the auditor, should be displaying open mouth panting or panting with dropped wings. This observation must be observed before walking through the birds, to avoid panting caused by human handling or presence.



Broilers can be susceptible to leg problems, which can be associated with increased mortality, pain, or discomfort. However, these leg problems can be controlled through good management and preventative care. Because this is a primary welfare concern for broiler chickens, gait score should be observed regularly for each flock and by the auditor at the time of the audit. While performing transect walks, the auditor must walk approximately 100 feet from the wall to the waterline and record the number of broilers that cannot walk 5 feet or there is obvious lameness (gait score 2)¹⁶. Auditors must monitor the number of broilers observed with a gait score of 2 at the time of the audit.

GAIT SCORING BROILER CHICKENS¹⁶

SCORE 0

Broiler can walk at least 5 ft with a balanced gait. Broiler may appear ungainly but with little effect on function.

SCORE 1

Broiler can walk at least 5 ft but with a clear limp or decidedly awkward gait.

SCORE 2

Broiler will not walk 5 ft. May shuffle on shanks or hocks with assistance of wings.

Dorsal recumbency syndrome (DRS) affected broilers fall onto their backs due to an unknown cause and are unable to right themselves¹⁷. Because of this stance, some caretakers refer to these as “turtle broilers”. Chronically affected broilers often experience wing trauma or ataxia, preventing normal feed

and water intake behavior¹⁷. Because these broilers experience poor welfare conditions, management of such broilers should be evaluated with the flock veterinarian to minimize incidence of these broilers in the flock. Auditors must monitor the number of DRS broilers observed at the time of the audit.

TRANSPORT GUIDELINES

TRANSPORT AND HANDLING SOPS

Transport is a necessary step in broiler production and should also be a positive and low-stress experience for the broilers. The transport and handling of broilers must be kept to an absolute minimum. Personnel involved in transport must be thoroughly trained and competent to carry out the tasks required of them because increased fear, leg injury, and mortality have been associated with poor catching and loading technique³. Animal transport systems must be designed and managed to help ensure broilers are not caused unnecessary distress or discomfort.

To promote a positive welfare experience during loading and transport, an animal welfare officer (AWO) must be identified (and documented) to be present during this time and responsible for checking that all broilers are loaded correctly, that all are upright or not caught on anything in the modules, that the density in the modules is appropriate for the size of the broilers and ambient temperature, that no injured or unfit broilers are being transported, and that all transport SOPs are being followed. The name of the AWO must be recorded at the time of the audit.

American Humane places high importance on up to date and available SOP documents.

AT A MINIMUM THE SOPS MUST INCLUDE DOCUMENTS OUTLINING THE FOLLOWING:

- Broilers must not be deprived of food for more than a total of 16 hours (including loading, transport, and up to processing) and must have access to water until catching begins.
- Before catching, feeders/waterers and other obstacles must be removed and catching should take place in low lighting to reduce the fear reaction in the broilers.
- During catching, the catchers should take any and all precautions to not frighten the broilers and to prevent crowding; if crowding does occur, then the catchers must stop and allow the broilers time to spread out and settle before resuming catching.
- Before loading the broilers into the transport modules, the modules must be inspected to determine if the modules are appropriate for the size/weight of the broilers being loaded, have no sharp edges or protrusions that could cause injury, and must have a solid floor surface to prevent soiling of the broilers beneath.
- **When catching broilers by hand:**
 - No more than three broilers can be carried at a time (unless the following performance-based metrics data are provided from the processing plant, meet AHC tolerance levels and approved by American Humane: broken wing score, broken leg score, and leg bruising score)
 - Broilers must never be carried by the wings or the neck
 - Broilers must be placed in the transport module as quickly as possible



- **When catching with mechanical catchers:**
 - There must be sufficient personnel as required by the manufacturer for the operation of the machinery.
 - Broilers must be guided smoothly towards the mouth of the catcher, and the machine is run at a speed to allow the smooth loading of the broilers into the modules.
 - All personnel responsible for operation of the machinery must maintain constant vigilance throughout loading to help ensure that no broilers are caused injury.
- All personnel in charge of transportation and transport equipment, including non-employees, must be trained in handling broilers when loading and unloading them and while in transit. This must be verified through records or a Certificate of Conformance (COC).
- In periods of hot weather, broilers must be transported at night or in the coolest part of the day OR systems must be in place to provide cooling during load in/out of broilers.
- Steps that are to be taken to shelter and protect the broilers when they are transported during extreme weather.
- Procedures to be followed in the event of an emergency, such as an accident.
- The person supervising the catching and loading of broilers must work closely and coordinate with the processing plant to minimize the time broilers spend waiting on the vehicle.
- Every effort must be made to help ensure journeys are completed without unnecessary delays, i.e. drivers must be aware of any potential traffic problems and plan their journey accordingly.
- If it is necessary to keep broilers on a stationary vehicle, the driver must take action to avoid thermal stress to the broilers.

Records must be kept for at least one year and made available documenting that for each flock, the time of departing from the farm to the time of unloading at the processing plant for each transport truck

did not exceed 12 hours. If the 12 hours is exceeded, there must be documentation of the corrective actions and what was done to prevent future occurrences.

ON-SITE EVALUATION OF CATCH AND TRANSPORT

At the time of the Transport audit, the auditor must inspect and observe a representative sample of transport modules and broiler handling. A representative sample of catch crews is defined as 33% of catching crews at audit site at the time of the scheduled audit. For each catch crew, the auditor

must observe 20% of the catch crew's transport modules, with a minimum of 10 modules, spread out over at least 2 trailers.

During catching, the auditor must inspect the catching environment for low lighting and to check if feeders, waters, and other obstacles are removed from the house. Before catching, the auditor must also inspect the representative sample of transport modules for any damaged or defective modules. Damaged or defective



modules include modules with bent wires, holes large enough for a broiler to escape, a door that doesn't close properly, sharp edges, protrusions, or other opportunities where broilers could be injured.

During catching and handling, the representative sample must be observed for proper handling and loading techniques. If the broilers are being caught by hand, no more than three broilers can be carried at a time (unless performance criteria are met as outlined in the SOP), broilers must never be carried by the wing or neck, and care should be taken to get the broilers into the module as quickly as possible. If the catchers are using a mechanical catcher, there must be sufficient personnel to operate the machinery, broilers must be guided smoothly into the modules, and care must be taken to avoid injury to the broilers. While catching, the crews must take appropriate action to prevent crowding or piling of broilers, which would be indicative of stress and could cause injury to the broilers. If any crowding does occur, the crew must stop handling and

allow the broilers to spread out and settle before catching is resumed.

After loading the transport modules, the auditor must inspect the representative sample of modules to assess that the broilers within the modules have a solid floor to prevent soiling broilers below them, that all broilers are upright and no body parts are caught in the door, the density of the module is appropriate, and no broilers are stacked on top of one another. It must also be apparent to the auditor that steps are taken to shelter and protect the broilers during loading and transport during transport in extreme weather conditions.

During catching and transport, any injured broilers must not be loaded for transport, but are treated or euthanized as soon as possible following completion of load out per the producer's Animal Health Plan.



PROCESSOR GUIDELINES

RECORDS AND DOCUMENTATION

All processing systems must be designed and managed to help ensure that broilers are not caused unnecessary distress or discomfort. The pre-slaughter handling of broilers must be kept to an absolute minimum. Personnel involved in slaughter must be thoroughly trained and competent to carry out the tasks required of them.

One of the best ways to prepare for an external audit is to do an internal, practice audit of the site in question. For that reason, American Humane Certified™ asks that each facility perform and maintain records

of at least one practice internal audit completed for each facility at least once annually. This can be the most effective way to find areas of non-compliance before the actual audit, raise any questions that one might need answers to, or allow for clarification of the standards. The internal audit must be performed using a broiler chicken welfare audit tool, such as the American Humane Certified™ Broiler Chicken Audit Tool but can also include NCC Broiler Welfare Guidelines² and other broiler welfare audit tools.

There must be a company policy clearly detailing and outlining the expectations of the animal caretakers regarding animal care that each caretaker must review and sign indicating that they understand.

THE COMPANY ANIMAL WELFARE POLICY MUST INCLUDE:

- Emphasis of the company's commitment to providing an environment which promotes high standards of animal welfare.
- The company has implemented an animal welfare "whistle blower" policy that protects employees who report animal welfare issues.
- The company has implemented a "zero-tolerance" policy which states that kicking, throwing, making loud noises or quick movements to purposefully scare birds and other acts of abuse towards the broilers will not be tolerated and, upon the discretion of the company, these actions are grounds for immediate dismissal.

Each company must also have an Employee Code of Conduct policy available to workers

in a language they can understand, and each worker must be trained in this policy.

THE EMPLOYEE CODE OF CONDUCT POLICY MUST INCLUDE:

- Each worker has the responsibility for and is expected to contribute to upholding high standards of animal welfare at all times as they perform their own duties.
- All personnel are expected to always handle the broilers in a positive and compassionate manner.
- All personnel have access to the Animal Welfare Incident Report or a similar company document. Personnel are instructed to complete and submit this document whenever they observe incidences related to animal welfare that cause them concern.
- In addition to the worker's assigned duties, each also must be cognizant that the basic requirements such as adequate feed, water, lighting, ventilation, temperature control, and biosecurity must be provided to the broilers at all times, and a supervisor must be notified if any of these basic necessities are lacking.

Each facility must have at least one designated Animal Welfare Officer (AWO). The AWO is the individual who is responsible for ensuring the implementation of animal welfare policies and for monitoring operations to help ensure that high standards of animal welfare are being always provided to the animals. This person must be making frequent checks throughout the day to help ensure that broilers are being effectively stunned and take immediate action for any instance of compromised welfare. The name of this person must be provided at the time of the audit.

Processors must also keep up to date SOP that are regularly updated and available in written or electronic form to all workers in

a language they can understand relating to any daily, weekly, and monthly activities and procedures relating to animal care or the upkeep of facilities. Each animal caretaker must sign that they have been presented this material and that they understand it. Having access to written SOP are helpful to the animal caretakers for training purposes, in case there are questions about how a task is performed, and uniformity of task completion on a larger scale to continuously improve welfare of the animals they are caring for. Because proper training of animal caretakers is imperative for animal welfare and completion of normal animal care, American Humane places high importance on up to date and available SOP documents.

AT A MINIMUM THE SOPS SHOULD INCLUDE:

- Inspection of transport modules.
- Module transport, holding, and dumping procedures.
- Defective module plan.
- Proper shackling plan.
- Daily checklists and inspections.
- Warning signs and troubleshooting.
- Schedules for routine maintenance.
- Protocols specific to type of stunning equipment being used in the event of power failure or equipment breakdown.
- Protocols to be followed in the event of deviations from expected equipment function (i.e. when the equipment may be repaired in house and when the manufacturer needs to be called. This does not include defects or failures of the primary equipment, which shall automatically result in the system being shut down).
- Protocols to be followed in the event of power failure, including back-up procedures (i.e., use of electric stun baths or other method of stunning approved by American Humane).
- Proper broiler handling.
- Assessing if a broiler receives a proper stun and cut.



The processing plant must be performing monthly measures of plant performance parameters to help ensure that the facility is monitoring animal welfare within the plant and assisting monitoring of animal welfare on-farm. Parameters must be measured using American Humane Certified™ guidelines and follow American Humane Certified™ Broiler Chicken Welfare Standards tolerance levels for each parameter.



These records include:

- Shackling scoring (where applicable)
- Stunning rate scoring
- Missed broilers at auto knife scoring
- Broken wing scoring
- Broken leg scoring
- Bruised leg scoring
- Paw scoring
- Live broilers entering the scalding scoring
- Number of condemnations by the USDA
- Transport deaths or dead on arrival (DOA) broilers

If any of these recorded scores are outside the specified AHC limit, then there must also be records outlining the corrective measures taken to improve the measures. If the DOA or paw scoring levels are missed, the plant is responsible for communicating these results to the transportation AWO or farm AWO, respectively.

A high degree of caring, responsible management, and husbandry is vital to help ensure good animal welfare. Managers and staff must be thoroughly trained and competent in animal handling and proper processing plant duties. They must have a good working knowledge of their system and the broilers under their care. The continuing education of personnel who have day-to-day contact with the

animals is one of the most important ways to help ensure behaviors that support and promote animal welfare. It is important to have documentation confirming personnel training in aspects of flock welfare appropriate to the level of operation (videos, manuals, SOPs).

All staff must be trained before any hands-on contact with the broilers. All staff must be trained at orientation in a language that each worker can understand, and training must be updated annually. Training may include videos, manuals, and/or SOPs, but must include hands-on experience and evaluations. Training records must clearly define what each staff person has been trained in, as well as signatures of the trainer, the trainee, and the date of each training.

EACH STAFF PERSON WHO IS RESPONSIBLE FOR OPERATING STUNNING EQUIPMENT MUST BE TRAINED IN THE FOLLOWING, AT A MINIMUM:

- Procedures for starting up, using, and shutting down equipment.
- Correct operation of equipment and the duties and responsibilities of each operator.
- Expected operation of equipment and how to recognize when equipment is not operating correctly or is not calibrated.
- Instructions for performing routine maintenance and troubleshooting.
- Protocol to be followed in the event of alarms or error messages, and how to distinguish between minor alerts and those problems that warrant immediate shutdown of the equipment.
- Protocol or contingency plan to be followed in the event of equipment or power failure.
- Assessing if broilers are effectively stunned.

The processing plant is also responsible for keeping records of daily checks of operation equipment (proper inspection of equipment, maintenance of equipment, etc.) specific to the stunning equipment

being used and processing records (line speed, design capacity, processing rates, etc.). The records must be kept for at least one year and available to the auditor at the time of the audit.

OBSERVATION OF BROILER PROCESSING

The animal harvest process must minimize distress and pain to the animals before they are humanely stunned and processed. For that reason, it is imperative that the broilers are comfortable up to the point of stunning in all facilities.

Starting at the unloading or holding area, there must be reduced or blue lighting, the broilers must be protected from weather, provided a comfortable environment, and any broilers that are injured or suffering must be humanely euthanized as soon as possible. The travel modules must be inspected to help ensure that there are no defects, and where a defect is found that module must be removed from use until the defect is fixed. During the audit, the auditor must observe at least 25% of the travel modules for broilers experiencing signs of thermal discomfort.

When the broilers are unloaded from the trailer, care must always be taken by the staff person operating the unloading equipment to handle in a low-stress manner. During the audit the auditor must observe 3 modules at each unloading line being transferred from the trailer to the module dump area to help ensure modules are unloaded in a way to minimize risk of injury and distress. When broilers are dumped from the transport modules, care must always be taken by the staff person at the dumping area to handle them in a low-stress manner and minimize the risk of injury. During the audit the auditor must observe 3 modules being dumped to help ensure that broilers are dumped in a way to minimize risk of injury and distress.

The dumping area must be located in a closed area and also have a barrier to prevent any broilers from falling from the belt. If a loose bird is found, it must be taken immediately to the hanging area or, if injured, euthanized away from the line as soon as possible per AVMA guidelines.



For facilities that require live-bird shackling, the broilers must be hung in a timely manner, must be hung by both legs, and must not be mishung (high hanging, cross-legged, etc.). During the audit the auditor must observe 500 broilers leaving the shackling area. While leaving the shackling area there may be no more than 2 broilers hung on the shackles by one leg and no more than 5 broilers mishung out of 500.

Appropriate measures must be taken, and observed by the auditor, to prevent wing flapping and birds raising their heads before reaching the stunning bath (i.e. the use of a breast bar, curtains, reduction in noise, low light intensity, running a hand down the bird's back at shackling).

Whatever the stunning method that the facility uses, the process must be quick

and smooth for the broilers, meaning that all equipment is working properly, broilers are handled or restrained appropriately, broilers are stunned quickly, staff are checking all broilers for an effective stun, and the stunning system is rendering birds unconscious prior to neck cutting (exsanguination). Specific processes and procedures are dependent on the type of stunning performed.

ELECTRICAL WATER BATH STUNNING, CONTROLLED ATMOSPHERE STUNNING (CAS), LOW ATMOSPHERIC PRESSURE STUNNING (LAPS), OR HAND-HELD ELECTRICAL STUNNING ARE ACCEPTABLE METHODS OF STUNNING:

- Where an electrical water-stunning bath is used: The water bath stunner must be designed and set up to prevent broilers from receiving pre-stun shocks. The water bath used for stunning or euthanizing broilers must be of sufficient size and depth, and the water must not overflow at the entrance. The stunning bath must be set at a height appropriate for the size and number of broilers. In particular, the height must be set such that the heads of all broilers make effective contact with the water bath. A current sufficient to induce insensibility in all broilers prior to neck-cutting must be used. The water bath must be fitted with a controller that clearly displays voltage, current, and frequency settings to accurately monitor current flow through the bath when loaded with broilers.
- Where CAS is used: There must be sensors, cameras, and alarms present that are working properly. The operator must have performed an automatic leak test on each chamber and each chamber must have passed, commonly indicated with a green light. If any chambers did not pass, commonly indicated by a red light, the system must be put into bypass and backup protocols need to be followed.
- Where LAPS is used: There must be sensors, cameras, and alarms present that are working properly. The operator must have performed an automatic leak test on each chamber and each chamber must have passed, commonly indicated with a green light. If any chambers did not pass, commonly indicated by a red light, the system must be put into bypass and backup protocols need to be followed. The system must be put into an auto setting to that the operator is able to view the internal pressure and elapsed time of each cycle.
- Where hand-held electrical stunners are used: The broilers must be restrained in a cone or on a shackle. They must be stunned immediately after shackling. The stunning electrodes must be placed carefully and firmly in the optimum position (between the ear and the eye). Stunners must be operated until initial wing flapping ceases, or until the legs become rigid and extended.



All broilers leaving the stunner must be checked to ensure they have been effectively stunned or euthanized (via an AVMA approved method). Staff must be trained to recognize the signs of an effective stun and use these signs to recognize that broilers have been effectively stunned or are dead¹⁸. During the audit the auditor must observe 500 broilers leaving the stunner for any missed broilers. For electric water bath stunning systems there can be no more than 5 broilers missing the stunner and for LAPS or CAS there can be no broilers missed.

SIGNS OF A CONSCIOUS ANIMAL

- Stands intentionally or remains standing after attempted stunning.
- Eye tracking and/or reacting to surroundings.
- Righting reflex.
- Vocalizations.

SIGNS OF AN UNCONSCIOUS ANIMAL

- Collapses or falls after being stunned.
- No eye tracking/reactions to surroundings.
- Floppy head and neck.
- Limp.
- No menace response.

THE MOST RELIABLE INDICATOR THAT A BROILER IS PROPERLY STUNNED BY THE LOW VOLTAGE METHOD IS THE ELECTRO-EPILEPTIC FIT. THE CHARACTERISTICS OF THIS CONDITION ARE:

- Neck arched with head directed vertically.
- Eyes opened.
- Wings held close to body.
- Legs rigidly extended with constant rapid body tremors.

THE PHYSICAL CONDITION OF THE ELECTRO-EPILEPTIC FIT ARE SHORTER LASTING AND LESS PRONOUNCED WHEN CARDIAC ARREST IS INDUCED AT STUNNING. THEY ARE FOLLOWED BY:

- Completely limp carcass.
- No breathing.
- Loss of nictitating membrane reflex.
- Dilated pupil.
- Comb pinch.

During the audit the auditor must observe 500 broilers before entering the scalding to assess how many broilers have broken or dislocated wings. Auditors must use the Wing Injury Scoring Guide published by the American Association of Avian Pathologists Animal Welfare & Management Committee (2022) and outlined below.

Evaluation of the wings includes evaluation of injury or damage, such as broken or dislocated wings. Wings must be evaluated

PASS

- Normal wing posture with wings tucked close to body.
- No dislocation or broken bones noted.

FAIL

- Abnormal wing posture or wing hangs straight down due to dislocation.
- Visible broken wing bone(s).

at the processing plant before or after stunning and before feather removal. The auditor should be facing the breast of the broiler and should evaluate both wings on each broiler for the 500-broiler sample. Note: this is a count of broilers, not individual wings, so if a broiler has 2 broken or dislocated wings it still only counts for one broiler. During observation there can be no more than 15 broilers with broken or dislocated wings.



**Adapted from the Wing Injury Scoring Guide published by AAAP (2022).*



Note: Posture of the wings is the primary criteria for this scoring scale. Broilers with normal wing posture will have wings tucked close to the body and slightly extended from the side of the breast. Both wing appearance and wing position should be evaluated for accuracy during the audit to identify broken or dislocated wings. Wings should be evaluated before feather removal.

Where applicable, no more than 10 seconds must elapse between stunning and neck cutting. During the audit the auditor must

record how many seconds elapse between stunning and neck cutting for 3 broilers on each line.



Carotid arteries and jugular veins must be effectively severed manually or by using automated equipment that performs a ventral cut. This cut must be checked by the appointed member of staff who must be given sufficient time to sever the blood vessels manually, if necessary. During the audit the auditor must observe 500 broilers leaving the automatic knife area. During observation there must be no more than 5 broilers that were missed by the automatic cutter and there must be a manual backup available to perform the effective ventral cut on each missed broiler.

After cutting the major blood vessel, at least 90 seconds must elapse between cutting and immersion into the scalding tank. During the audit the auditor must observe 3 broilers on each line and record how many seconds elapse between blood vessels being severed and immersion in the scalding tank.

After the picker, the auditor must observe 250 broilers to assess how many broilers have a failing paw score. Auditors must use the Broiler Paw Scoring System published by the American Association of Avian Pathologists Animal Welfare

& Management Committee (2022) and outlined below. Broiler paws should be evaluated at the processing plant to more precisely and efficiently assess the bottom of the foot. During observation, the paw includes the foot pad (red circled area) and the toes. Paws should be assessed after removal or after paw cleaning at the plant. A random sample of 500 paws (250 broilers) should be evaluated per line. While inspecting each paw, a pass or fail score should be assigned. There may be no more than 25 broilers or 50 paws with a score of “fail” during the audit.

PASS

- Normal skin color (white to yellow).
- Discoloration or darkened skin.
- Hyperkeratosis (thickening of skin).
- Lesion(s) covering less than ½ of foot pad.



FAIL

- Erosions, ulceration, or scab formation that covers more than ½ of foot pad and may include toes
- Hemorrhages or swelling of foot pad



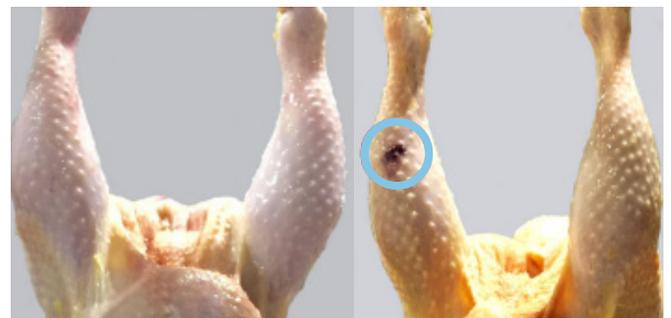
**Adapted from Broiler Paw Scoring System published by AAAP (2022).*



After the picker, the auditor must observe 500 broilers to assess how many broilers leaving the defeathering area have broken or bruised legs. Auditors must use the Leg Injury Scoring Guide published by the American Association of Avian Pathologists Animal Welfare & Management Committee (2022) and outlined below. Leg condition scoring includes bruises (hematomas) on the leg and broken bones. Legs should be evaluated at the processing plant after carcass scalding and feather picking of the carcass, but before chilling. The auditor should be positioned to see the keel of the broiler and should evaluate both legs on each broiler in a 500 broiler sample. Note: this is a count of broilers, not individual legs, so if a broiler has 2 broken or bruised legs it still only counts for one broiler.

PASS

- Normal skin color and no broken bone.
- Slight discoloration or darkened skin.
- Bruise smaller than a quarter.



FAIL

- Broken leg bone is visible
- Bruise larger than a quarter
- Various bruises larger than a quarter



**Adapted from Broiler Leg Condition Scoring System published by AAAP (2022).*

REFERENCES

- 1 American Veterinary Medicine Association (AVMA). 2020. AVMA Guidelines for the Euthanasia of Animals. <https://www.avma.org/sites/default/files/2020-02/Guidelines-on-Euthanasia-2020.pdf>
- 2 National Chicken Council (NCC). 2022. National Chicken Council Animal Welfare Guidelines and Audit Checklist for Broilers. https://www.nationalchickencouncil.org/wp-content/uploads/2023/01/NCC-Broiler-Welfare-Guidelines_Final_Dec2022-1.pdf
- 3 Federation of Animal Science Societies (FASS). 2020. FASS Guide for the Care and Use of Agricultural Animals in Research and Teaching. 4th Edition.
- 4 Department for Environment Food and Rural Affairs (DEFRA). 2002. Code of Recommendations for the Welfare of Livestock – Meat Chickens and Breeding Chickens. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69372/pb7275meat-chickens-020717.pdf
- 5 Kang, S. W., K. D. Christensen, D. Aldridge, and W. J. Kuenzel. 2020. Effects of light intensity and dual light intensity choice on plasma corticosterone, central serotonergic and dopaminergic activities in birds, *Gallus gallus*. *General and comparative endocrinology*, 285: 113289.
- 6 Kang, S. W., K. D. Christensen, M. T. K. Jr, and S. K. Orlowski. 2024. Effects of Environmental Enrichments on Welfare and Hepatic Metabolic Regulation of Broiler Chickens. *Animals*, 14: 14040557.
- 7 Kang, S. W., K. D. Christensen, M. T. K. Jr, S. K. Orlowski, and J. Clark. 2023. Effects of a variable light intensity lighting program on the welfare and performance of commercial broiler chickens. *Frontiers in Phys.* 14: 1059055.
- 8 American Veterinary Medical Association (AVMA). 2001. AAAP guidelines for judicious therapeutic use of antimicrobials in poultry. <https://www.avma.org/resources-tools/avma-policies/aaap-guidelines-judicious-therapeutic-use-antimicrobials-poultry>
- 9 Bilgili, S. F., J. B. Hess, J. P. Blake, K. S. Macklin, B. Saenmahayak, and J. L. Sibley. 2009. Influence of bedding material on footpad dermatitis in broiler chickens. *Poultry Sci.* 18:583-589. doi: 10.3382/japr.2009-00023
- 10 Shepherd, E. M., and B. D. Fairchild. 2010. Footpad dermatitis in poultry. *Poultry Sci.* 89:2043-2051. doi: 10.3382/ps.2010-00770.
- 11 Estévez, I. 2007. Density Allowances for Broilers: Where to Set the Limits? *Poultry Sci.* 86:1265-1272. doi.org/10.1093/ps/86.6.1265
- 12 De Jong, I., C. Berg, A. Butterworth, and I. Estevéz. 2012. Scientific report updating the EFSA opinions on the welfare of broilers and broiler breeders. EFSA Supporting Publications 9(6).
- 13 Riber, A.B., H. A. van de Weerd, I. C. de Jong, and S. Steinfeldt. 2018. Review of environmental enrichment for broiler chickens. *Poultry Sci.* 97:378–396. doi.org/10.3382/ps/pex344.
- 14 Mack, L.A., J. N. Felver-Gant, R. L. Dennis, and H. W. Cheng. 2013. Genetic variations alter production and behavioral responses following heat stress in 2 strains of laying hens. *Poultry Sci.* 92:285–294.
- 15 Mahmoud, U. T., M. A. M. Abdel-Rahman, M. H. A. Darwish, T. J. Applegate, and H. Cheng. 2015. Behavioral changes and feathering score in heat stressed broiler chickens fed diets containing different levels of propolis. *Applied Anim. Behav. Sci.* 166:98-105.
- 16 Webster, A. B., B. D. Fairchild, T. S. Cummings, and P. A. Stayer. 2008. Validation of a three-point gait-scoring system for field assessment of walking ability of commercial broilers. *J. of Applied Poultry Res.* 17(4):529-539.
- 17 Che, S., L. Weber, A. Novy, S. Barbut, and L. Susta. 2023. Characterization of dorsal recumbency syndrome associated with woody breast in broiler flocks from Ontario, Canada. *Poultry Sci.* 102:102307.
- 18 Humane Handling: Consciousness and Stunning. United States Department of Agriculture. https://www.fsis.usda.gov/sites/default/files/media_file/2021-07/Humane-handling-Consciousness-and-Stunning-20210406.pdf.

ADDITIONAL REFERENCES

- BenSassi, N., J. Vas, G. Vasdal, X. Averós, I. Estévez, and R. C. Newberry. 2019. On-farm broiler chicken welfare assessment using transect sampling reflects environmental inputs and production outcomes. *PLoS One* 14(4): e0214070.
- BenSassi N., X. Averós, and I. Estevez. 2019. The potential of the transect method for early detection of welfare problems in broiler chickens. *Poultry Sci.* 98:522–532.
- Council of the European Union, n.d. Council Directive 2007/43/EC laying down minimum rules for the protection of chickens kept for meat production. <https://eurlex.europa.eu/eli/dir/2007/43/oj> (accessed 4.29.19).
- Buijs, S., B. Ampe, and F. A. M. Tuytens. 2017. Sensitivity of the Welfare Quality® broiler chicken protocol to differences between intensively reared indoor flocks: which factors explain overall classification?. *Animal* 11(2): 244-253.
- Grandin, T. 2010. Animal Welfare Audits for Cattle, Pigs, and Chickens that use the HACCP Principles of Critical Control Points with Animal Based Outcome Measures. www.grandin.com/welfare.audit.using.haccp.html
- Grandin, T. and North American Meat Institute Animal Welfare Committee. 2021. Recommended animal handling guidelines & Audit guide: a systematic approach to animal welfare. https://www.meatinstitute.org/sites/default/files/original%20documents/Animal_Handling_Guide_English.pdf
- ISO, 2016. Technical Specification 34700: Animal welfare management- General requirements and guidance for organizations in the food supply chain No. 34700. ISO Copywrite office, Geneva, Switzerland.
- Jacobs, L., E. Delezie, L. Duchateau, K. Goethals, and F. A. M. Tuytens. 2017. Broiler chickens dead on arrival: associated risk factors and welfare indicators.” *Poultry science* 96(2): 259-265.
- Kittelsen, K.E., B. David, R. O. Moe, H. D. Poulsen, J. F. Young, and E. G. Granquist. 2017. Associations among gait score, production data, abattoir registrations, and postmortem tibia measurements in broiler chickens. *Poultry Sci.* 96(5):1033-1040.
- Lourenço da Silva, M. I., I. C. Almeida Paz, G. H. Chaves, I. C. Almeida, C. C. Ouros, S. R. Souza, E. L. Milbradt, F. R. Caldara, A. J. Satin, G. A. Costa, and A. S. Glavina. 2021. Behaviour and animal welfare indicators of broiler chickens housed in an enriched environment. *Plos one*, 16(9):e0256963.
- Royal Society for the Prevention of Cruelty to Animals (RSPCA). 2011. RSPCA Welfare Standards for Chickens. <http://science.rspca.org.uk/sciencegroup/farmanimals/standards/chickens>
- United Egg Producers (UEP). 2022. Fire Prevention and Mitigation. <https://unitedegg.com/wp-content/uploads/2022/02/Fire-Mitigation-Report-300dpi-Final-2.3.2022.pdf> .
- van der Eijk, Jerine AJ, Jan van Harn, Henk Gunnink, Stephanie Melis, Johan W. van Riel, and Ingrid C. de Jong. “Fast-and slower-growing broilers respond similarly to a reduction in stocking density with regard to gait, hock burn, skin lesions, cleanliness, and performance.” *Poultry Science* 102, no. 5 (2023): 102603.

