Practice and Challenges of Welfare Standard for Broiler Transportation and Slaughter

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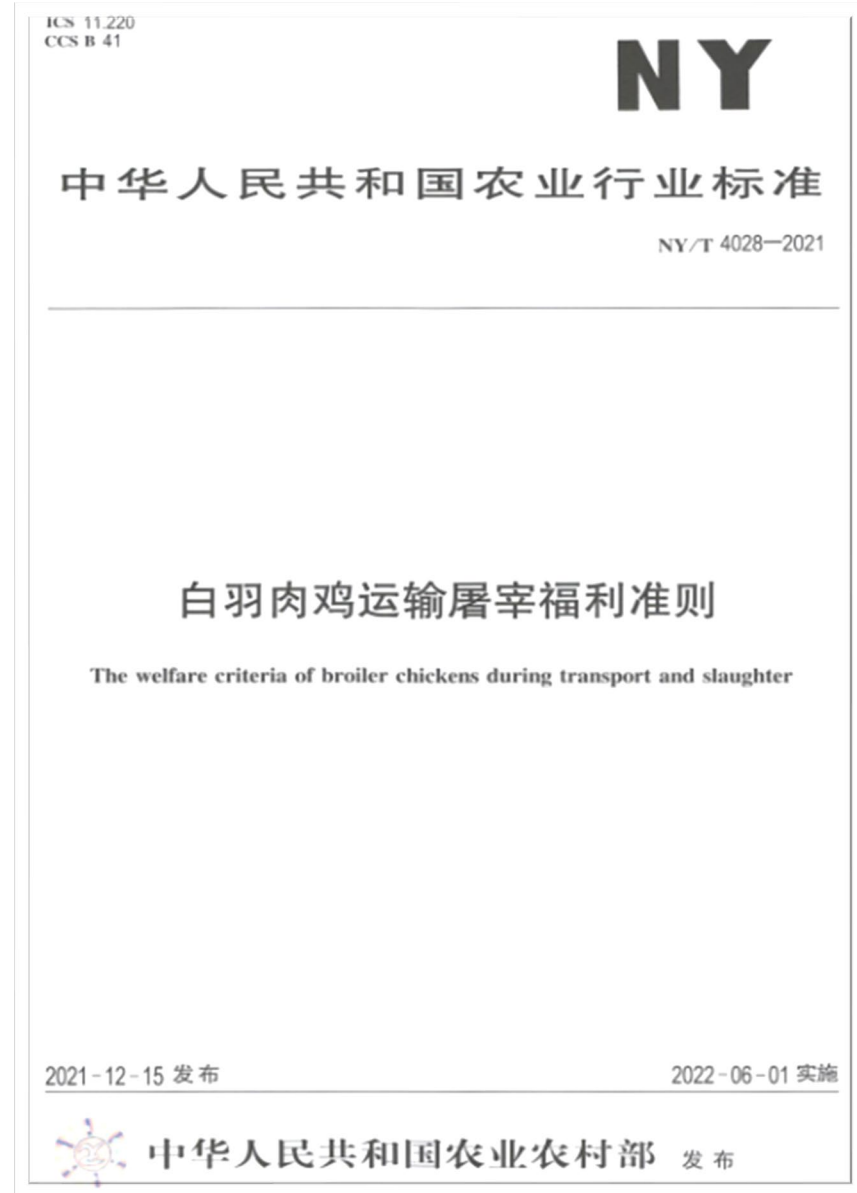
World Organisation for Animal Health
Founded as OIE

1. Legislative practice

Drafting Process

- **1. Setting a Drafting group**
  - More than 20 institutions collaborated on the drafting
  - Specific tasks assignment included: literature search, collation and translation, on-site investigation and analysis, text drafting, compiling instructions, field investigation , soliciting opinions etc.
- **2. Field investigation**
  - Investigation were conducted at 20 broiler farm and more than 10 slaughtering enterprises in 9 provinces from 2016 to 2021
- **3. Literature research**
  - WOAH Code — Chapter 7.3, 7.5 and 7.10
  - Foreign laws and standards — （EC）1/2005,（EC）1099/2009, RSPCA welfare standards for chickens, etc.
  - Domestic laws and standards — eg. GB/T 14978,T/CAS 267-2017
  - Manufacturer's website and equipment's specifications — eg. BAADER-KUBCO
- **4. Exchange and discussion**
  - On-the-spot seminar — conducted twice at Sunner Group in 2020 and 2022
  - Pre-review meeting — held twice in Nanjing in 2019 and in Xi'an in 2020
  - Communication through telephone, online conference, WeChat group and WeChat conference
- **5. Soliciting opinions**
- **6. Review and approval**



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中华人民共和国农业行业标准

NY/T 4028—2021

白羽肉鸡运输屠宰福利准则

The welfare criteria of broiler chickens during transport and slaughter

2021-12-15 发布　　2022-06-01 实施

中华人民共和国农业农村部 发布

NY/T 4028-2021 Welfare Criteria of Broilers during Transport and Slaughter

1. Scope
- specifies the welfare requirements and elements in the whole process of
  - Catching
  - Transport
  - Shackling
  - Stunning
  - Bleeding
- applicable to the whole process — from harvesting to slaughtering of broilers

3.Terms and Definitions
- Electric stunning — a reversible procedure in which an electric current passes through an animal's head to induce unconsciousness immediately

5. Transportion
- Pre-transport
  - transport vehicles and cages — washed and disinfected thoroughly
  - the hauler
    - complying with relevant national legislation
    - formulating a transport plan
- Containers
  - common transport cages — requirements
    - no missing cage doors, undamaged, free from sharp edges and protrusions
    - matching the species and size of the birds
    - ensuring that the head of the bird does't touch the top of the cage when standing
  - drawers for CAS — requirements
    - undamaged, free from sharp edges and protrusions
    - matching the facilities and equipment, such as drawer modules, reception, module de-stacker, emptying unit and the pit
    - ensuring that the head of the bird does't touch the bottom of the upper drawer when standing
- Space allowance — factors consideration: cages, species, temperature, duration, etc
  - allowing birds to stand and squat normally without overlapping
  - minimum space allowance
    - <1.6kg: 180-200 cm2/kg
    - 1.6 kg-3.0 kg: 160cm2/kg
    - 3.0 kg-5.0 kg: 115 cm2/kg
    - >5.0 kg: 105 cm2/kg
  - nor more than 57 kg/m2
- Loading
  - placing empty cages in the barn and then carrying the filled cages to the truck
  - placing empty cages on the deck of the truck and then delivering and filling birds in cages
  - using a forklift to transporting the loaded cages onto the truck
- Transport
  - protection from the thermal stress — such as cooling and ventilation system; a tarp or panel to protect from rain, snow or dust storm
  - journey and duration — avoiding long-distance transport, journey time no longer than 4 h
  - protection from motion stress — driving smoothly without aggressive driving styles to avoiding bumps, tilts and noise

7. Shackling
- Shackling before stunning
  - applicable to electrical stunning
  - requirement of shackles — matching the species and size of birds to be slaughtered
  - shackle operation — hung by both legs, breast comforters provided
  - light level from shackle point to stunning — dim or soft light
  - shackle line
    - with no bends from the shackle point to stunning point
    - running smoothly and steadily without sudden jolt or excess noise
- Shackling after stunning
  - suitable for CAS
  - hung by both legs, not one leg

9. Bleeding
- Stun-bleed interval
  - ≤ 10 s for electrical stunning
  - for CAS, ensuring unconsciousness during bleeding
- Sticking and bleeding
  - manual sticking
  - automatic sticking — incision checked by a designated person
- Death confirmation before scalding

2. Normative Reference
- GB/T 19478 Operating Procedure of Livestock and Poultry Slaughtering -Chicken

4. Harvesting
- Fasting — fasting time controlled at 6 hr to 12 hr before slaughter. access to drinking freely
- Catching requirements
  - lighting — under dark, blue or dim
  - noise — minimizing
  - re-grouping — to avoid trampling or injury
  - humane handling — Birds should't be grabbed and lifted by one leg, the wings, the head or the neck.
- Catching methods
  - Manual
    - by a single hand — grasping both legs of the bird with one hand
    - using both hands — grasping around the bird's body
  - Mechanical — e.g. Chicken Catching Harvester

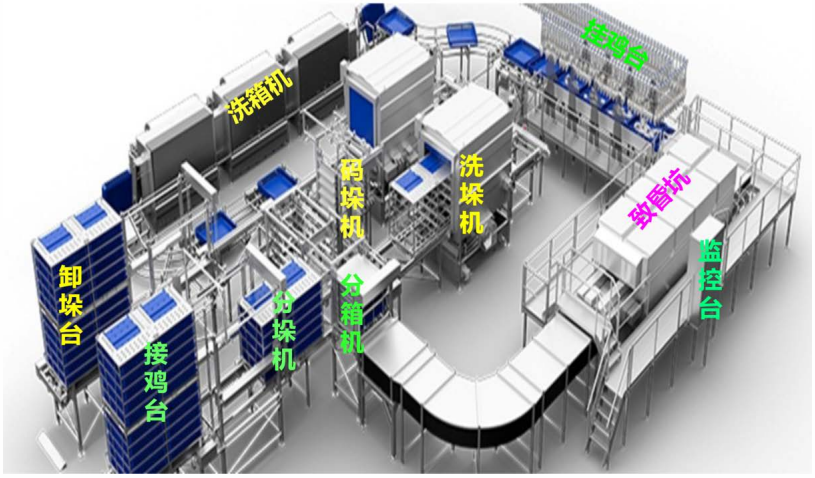
6. Lairage
- Resting — rest for 30 min prior to slaughter
- Lairage area
  - adequate ventilation
  - comfortable temperature and humidity
  - protection facilities provided
    - avoiding direct sunlight
    - avoiding adverse weather conditions
- Unloading — avoid throwing, tipping or dropping

8. Stunning
- Waterbath
- Watrebath
- CAS

Electric Stunning
- Types of Waterbath
  - low frequency (50-200 Hz)
  - medium frequency (200-400 Hz)
  - high frequency(400-1500 Hz)
- Design
  - electrodes — arranged uniformly at the bottom of the sink
  - earth rubbing bar — good contact with the shackles
  - the entry — a steep ramp bolted on to avoid pre-stun shocks
  - water replenishment device — ensure the water level required for stunning
- Entry ramp
  - material requirements — non-conductive
  - design
    - designed with a low front and a high rear
    - extend over the waterbath
- Parameters control
  - the instantaneous current passing through the body of birds
  - voltage, exposure time
- Stunning effectiveness
  - stunning efficiency≥ 98%
  - signs (at least 2 signs met simultaneously)
    - a) non-rhythmic breathing, and no abdominal undulation
    - b) neck arched with head directed vertically; or completely limp carcass
    - c) no blinking
    - d) wings held close to the body
    - e) constant body tremors
    - f) no response to any pinch or prick of the bird comb
    - g) non-vocalization
- Emergency — if the slaughter line is stopped ≥60 s, a backup should be used to stun the birds hung on the line
- Equipment maintenance — routinely cleaned and checked daily

CAS
- Operators
  - proficient in the operation of the CAS system
  - familiar with the methods and procedures of gas injection and clearance
  - mastering the methods and procedures in case of emergency
- Pit
  - entrance or exit
    - gas injection and clearance
    - inlet and outlet for broilers
  - CO2 concentration distribution
    - low level environment (0-40%, the 1st phase)
    - high level environment (40%-100%, the 2nd phase)
- Gas preparation
  - adequate supply of CO2 gas
  - dry ice — sublimate to the gas state in advance
- Operational requirements
  - devices run smoothly (include: reception system, module de-stacker, emptying unit, conveyor belt)
  - CO2 level and exposure time
    - the 1st phase (0-40%): 3-5min
    - the 2nd phase(40%-70%): 1.5-2 min
- Monitoring
  - monitors
    - CO2 gas sensors, temperature sensors, humidity sensors
    - cameras, videos
  - quantities and distribution — all-round, no dead angle, continuous monitoring
  - digital monitoring system — real-time adjustment, control and monnitoring
  - early warning system — alarm in time and correct abnormal parameters

10. Documentary
- key processes monitored and recorded accordingly
- archives kept for at least 2 years



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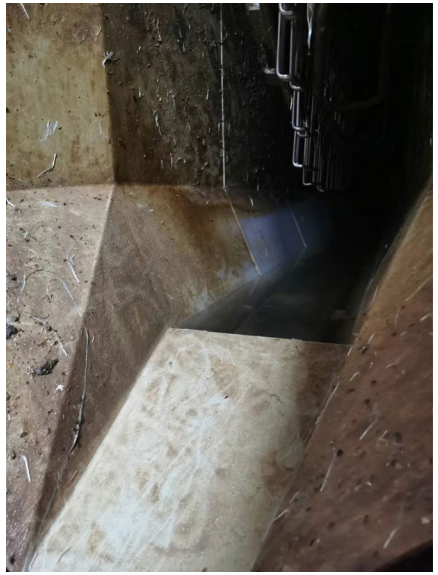

8. Stunning

- **Electric Stunning**
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    - the entry — a steep ramp bolted on to avoid pre-stun shocks
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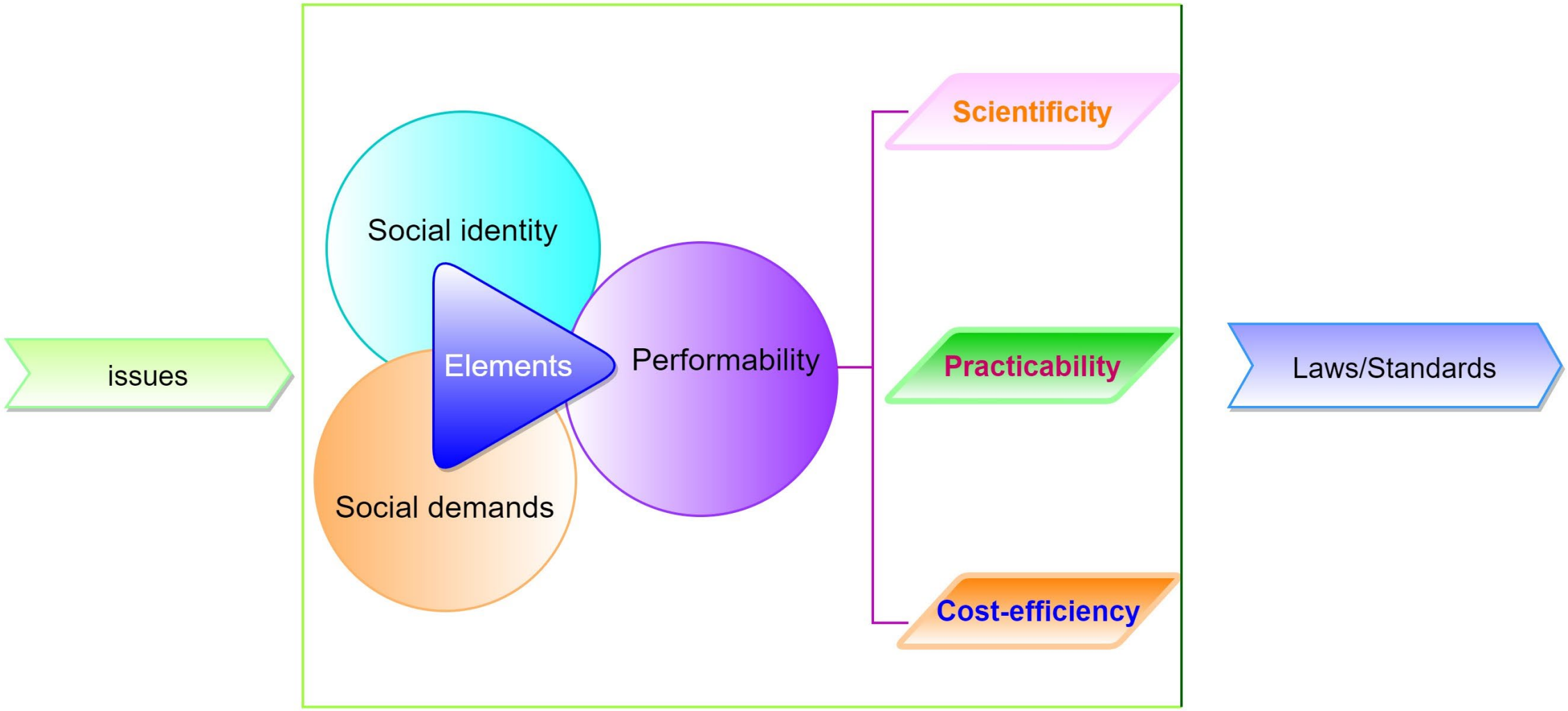
2. Comparison

Procedures		NY/T 4028-2021		WOAH Code	
		Article	Contents	Article	Contents
6.Lairage		6.3	The lairage area should be provided with protection from direct sunlight and from adverse weather conditions to reduce stress.	7.5.4. Care of animals in lairages	13. Poultry awaiting slaughter should be protected from adverse weather conditions and provided with adequate ventilation.
		6.4	In summer time, additional ventilation and sprinklers should be provided.		7. In order to prevent heat stress, animals subjected to high temperatures, particularly pigs and poultry, should be cooled by the use of water sprays, fans or other suitable means.
7.Shackle	7.1 Shackle before stunning	7.1.2	The shackle size should be appropriate to fit the size of the shanks (metatarsal bones) of birds.	7.5.7. 2. Electrical stunning b. Electrical stunning of birds using a water-bath	The shackle size should be appropriate to fit the size of the shanks (metatarsal bones) of birds.
		7.1.3	Bird is removed from the transport container, hung by both legs on a stainless-steel shackle. One should gently put down the legs and body of the bird. From the point of shackling to entry into the electrical water-bath, breast comforters that calm the birds must be provided to reduce the incidence of head raising and wing flapping.		A breast comforter can be used effectively to reduce wing flapping and calm birds. Birds should be hung on shackles by both legs.
		7.1.5 and 7.16	The shackle line should be designed with no sharp bends from the shackling point to entry into the electrical water-bath. The speed of the shackle line should run smoothly and steadily. Sudden jolt of the shackles and excess noise should be avoided as much as possible. Hanging of birds should be carried out in such a way that unnecessary pain or stress is avoided.		There should be no sharp bends or steep gradients in the shackle line and the shackle line should be as short as possible consistent with achieving acceptable line speeds, and ensuring that birds have settled by the time they reach the waterbath
	7.2 Shackle after stunning	7.2	7.2.1 This procedure is suitable for CAS. 7.2.2 After stunning, birds are sent out to the shackling area (see 8.2.4.5) where they are removed manually from the drawers. 7.2.3 Hung by both legs on a stainless-steel shackle, birds should be gently put down. 7.2.4 Hanging by only one leg should be avoided. Note: Shackling after stunning is a hanging procedure performed when the birds are at a unconscious state using the CAS process.	-	-

Procedures		NY/T 4028-2021		WOAH Code	
		Article	Contents	Article	Contents
8. Stunning	8.1 Water-bath stunning	8.1.2.2	An overhead electrode called an earth rubbing bar should be placed above the shackles. The earth rubbing bar should always be in contact with the shackles.	7.5.7. 2. Electrical stunning b. Electrical stunning of birds using a water-bath	The waterbath should be designed and maintained in such a way that when the shackles pass over the water, they are in continuous contact with the earthed rubbing bar.
		8.1.2.3	A steep ramp bolted on to the entrance of the water-bath can be effective on preventing pre-stun shocks caused by electrified spray on the body of birds.		The angle at which the shackle line approaches the entrance to the water-bath, and the design of the entrance to the water-bath, and the draining of excess “live” water from the bath are all important considerations in ensuring birds are calm as they enter the bath, do not flap their wings, and do not receive pre-stun electric shocks. In the case of birds suspended on a moving line, measures should be taken to ensure that the birds are not wing flapping at the entrance of the stunner.
		8.1.2.1	Electrodes that are immersed in water must evenly extend along the length and width of the water-bath.		The electrode immersed in the bath should extend the full length of the water-bath.
		8.1.3.4	Birds reaching the top of the rear ramp should get drawn up by the shackle line and then swing down into the water in one smooth freefalling movement. This should result in the bird’s head entering the water and the bird is stunned immediately.		Water-baths for poultry should be adequate in size and depth for the type of bird being slaughtered, and their height should be adjustable to allow for the head of each bird to be immersed. Birds should be immersed in the bath up to the base of their wings.
		8.1.4	Parameter setting and monitoring 8.1.4.1 A current monitor should be installed to accurately monitor the instantaneous current passing through the body of birds when entering the bath water. 8.1.4.2 The parameters such as voltage and exposure time should be set according to the manufacturer’s instructions of the stunning equipment and the minimum current through the body of the bird (see Appendix B).		Water-bath stunning equipment should be fitted with a device which displays and records the details of the electrical key parameter. Minimum current for stunning poultry when using 50Hz is as follows: (Table)

Procedures		NY/T 4028-2021		WOAH Code	
		Article	Contents	Article	Contents
8. Stunning	8.2 CAS(CO_2) stunning	8.2.4.3	The running time should be controlled between **3 and 5 minutes** when the drawer with birds passes through the low CO_2 level environment, so birds can adapt to the gradual increase of CO_2 concentration, in order to avoid adverse reactions such as convulsions, gasping, or consequences such as wing damage, tissue or joint bleeding caused by struggle and wing flapping.	7.5.7. 4. Gas stunning (under study) c. Gas stunning of poultry	ensure that duration of exposure is adequate to prevent recovery of consciousness;
		8.2.4.4	It is appropriate to run at a CO_2 concentration of 40 to 70% when the crate with birds passes through the high level environment, time should be reasonable to ensure that the birds will not re-gain consciousness during subsequent shackling and bleeding. Usually it should be controlled **between 1.5 and 2 minutes**; excessively long running times or CO_2 concentrations higher than 70% will affect the appearance or quality of slaughtered products.		
		8.2.5	Monitoring 8.2.5.1 It is appropriate to install CCTV and monitoring devices, such as CO_2 gas sensors, temperature sensors, humidity sensors and cameras. 8.2.5.2 The installation, quantity and distribution of monitoring devices should cover all parts of the pit system to facilitate all-directional and continuous monitoring of CO_2 levels and the condition of birds in the pit. 8.2.5.3 The digital monitoring system should be able to facilitate real-time adjustment, control and monitoring of CO_2 level, temperature, humidity, and conveyor speed and bird condition in the pit. 8.2.5.4 An early warning system should set up to facilitate timely correction when parameters are abnormal.		*monitor and maintain gas concentrations continuously during operation; *provide visible and audible alarm systems if gas concentrations are inappropriate to the species; *calibrate gas monitors and maintain verifiable records; *make provision to monitor and deal with recovery of consciousness;
9.Bleeding		9.1	The stun-to-stick interval should be determined according to the stunning efficiency to ensure that the birds will **not re-gain consciousness during bleeding**. The **stun-to-stick interval** should **be less than 10 seconds** when electrical stunning is used.	7.5.7. 7.Bleeding	Maximum–stun stick interval: Electrical methods and non-penetrating captive bolt 20 seconds CO_2 60 seconds (after leaving the chamber)
		9.3	Verification of death Death should be confirmed by checking the sticking and bleeding processes. Before entering the scalding tank, sticking and bleeding should have been performed on 100% of the birds.		ensure that all birds are dead before entering scalding tank;

3. Challenges



Legislative Challenges for animal welfare

Thank you!

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