NATIONAL FARM ANIMAL CARE COUNCIL
CONSEIL NATIONAL POUR LES SOINS AUX ANIMAUX D'ÉLEVAGE

CODE OF PRACTICE

FOR THE CARE AND HANDLING OF

PULLETS AND LAYING HENS

- Originally published: 2017
- Alignment with Part XII (Transport of Animals) of the Health of Animals Regulations: 2021
- Amendments published: August 2025

Canada

ISBN 978-1-988793-50-4 (book)
ISBN 978-1-988793-51-1 (electronic book text)

Available from:
Egg Farmers of Canada
21 Florence Street, Ottawa, ON K2P 0W6
Telephone: 613-238-2514
Fax: 613-238-1967
Website: www.eggfarmers.ca
Email: cpa@eggs.ca

For information on the Code of Practice development process contact:
National Farm Animal Care Council (NFACC)
Email: nfacc@xplornet.com
Website: www.nfacc.ca

Also available in French

Acknowledgment

Funding for this project has been provided through the AgriMarketing Program under Growing Forward 2. Amendments have been made with financial support from the AgriAssurance Program under the Sustainable Canadian Agricultural Partnership.

Disclaimer

Information contained in this publication is subject to periodic review in light of changing practices, government requirements and regulations. No subscriber or reader should act on the basis of any such information without referring to applicable laws and regulations and/or without seeking appropriate professional advice. Although every effort has been made to ensure accuracy, the authors shall not be held responsible for loss or damage caused by errors, omissions, misprints or misinterpretation of the contents hereof. Furthermore, the authors expressly disclaim all and any liability to any person, whether the purchaser of the publication or not, in respect of anything done or omitted, by any such person in reliance on the contents of this publication.

Cover image (top left and right) courtesy of L.H. Gray & Son Limited
Cover Image (bottom) courtesy of Egg Farmers of Canada
Perching Diagram (p. 25) Illustration by Jeremy Prapavessis

Table of Contents

Section 5 Health Management and Husbandry Practices

Section 6 Handling and Transportation

Section 7 Euthanasia

Section 8 On-Farm Depopulation

References

Appendices:

Preface

The National Farm Animal Care Council (NFACC) Code development process was followed in the development of this Code of Practice. The Code of Practice for the Care and Handling of Pullets and Laying Hens replaces its predecessor developed in 2003 and published by the Canadian Agri-Food Research Council (CARC).

The Codes of Practice are nationally developed guidelines for the care and handling of farm animals. They serve as our national understanding of animal care requirements and recommended practices. Codes promote sound management and welfare practices for housing, care, transportation, and other animal husbandry practices.

Codes of Practice have been developed for virtually all farmed animal species in Canada. NFACC's website provides access to all currently available Codes (www.nfacc.ca).

The NFACC Code development process aims to:

- link Codes with science
- ensure transparency in the process
- include broad representation from stakeholders
- contribute to improvements in farm animal care
- identify research priorities and encourage work in these priority areas
- write clearly to ensure ease of reading, understanding and implementation
- provide a document that is useful for all stakeholders.

The Codes of Practice are the result of a rigorous Code development process, taking into account the best science available for each species, compiled through an independent peer-reviewed process, along with stakeholder input. The Code Development process also takes into account the practical requirements for each species necessary to promote consistent application across Canada and ensure uptake by stakeholders resulting in beneficial animal outcomes. Given their broad use by numerous parties in Canada today, it is important for all to understand how they are intended to be interpreted.

Requirements - These refer to either a regulatory requirement, or an industry imposed expectation outlining acceptable and unacceptable practices and are fundamental obligations relating to the care of animals. Requirements represent a consensus position that these measures, at minimum, are to be implemented by all persons responsible for farm animal care. When included as part of an assessment program, those who fail to implement Requirements may be compelled by industry associations to undertake corrective measures, or risk a loss of market options. Requirements also may be enforceable under federal and provincial regulation.

Recommended Practices - Code Recommended Practices may complement a Code's Requirements, promote producer education and can encourage adoption of practices for continuous improvement in animal welfare outcomes. Recommended Practices are those which are generally expected to enhance animal welfare outcomes, but failure to implement them does not imply that acceptable standards of animal care are not met.

Broad representation and expertise on each Code Development Committee ensures collaborative Code development. Stakeholder commitment is key to ensure quality animal care standards are established and implemented.

This Code represents a consensus amongst diverse stakeholder groups. Consensus results in a decision that everyone agrees advances animal welfare but does not imply unanimous endorsement of every aspect of the Code. Codes play a central role in Canada's farm animal welfare system as part of a process of continual improvement. As a result, they need to be reviewed and updated regularly. Codes should be reviewed at least every five years following publication and updated at least every ten years.

A key feature of NFACC's Code development process is the Scientific Committee. It is widely accepted that animal welfare codes, guidelines, standards, or legislation should take advantage of the best available research. A Scientific Committee review of priority animal welfare issues for the species being addressed provided valuable information to the Code Development Committee in developing this Code of Practice.

The Scientific Committee report is peer reviewed and publicly available, enhancing the transparency and credibility of the Code.

The Code of Practice for the Care and Handling of Pullets, Layers, and Spent Fowl: Poultry (Layers): Review of Scientific Research on Priority Issues developed by the Poultry (Layer) Code of Practice Scientific Committee is available on NFACC's website (www.nfacc.ca).

Introduction

Codes of Practice strive to promote acceptable standards of care for animals in such a way that achieves a workable balance between the welfare needs of animals and the capabilities of farmers. Egg production in Canada involves interaction between pullet growers who rear birds starting with day-old chicks until about 19 weeks of age and egg farmers who care for the hens throughout the laying phase. Canada's egg industry is committed to prioritizing the health and well-being of all birds entrusted to their care. This commitment forms the basis of the industry's national *Animal Care Program* (ACP), first introduced in 2005 and based on the previous "Recommended Code of Practice for the Care and Handling of Pullets, Layers, and Spent Fowl."

While Codes of Practice for egg layers have been relied on in Canada for more than a decade, this Code, which utilizes NFACC's science-informed and consensus-based process, establishes firm guidelines to which pullet growers and egg farmers will be held accountable. In addition to advancing welfare requirements in key production areas such as barn environment, health and husbandry practices, transportation, and euthanasia, this Code mandates the phase out of conventional cages, so that hens may have more freedom of movement and the ability to perform a variety of natural behaviours.

This move to phase out conventional cages is a substantial undertaking that represents the most significant change ever to egg production in Canada. Since more space per bird, along with furnishings to accommodate hen behaviours, is required, existing facilities will not be able to accommodate the same number of hens. As a result, new barns will have to be built in order to produce the same number of eggs. This Code includes a transition strategy that allows for housing conversions to be completed on a staggered, practical, and orderly basis. It is expected that 50% of hens in Canada will be transitioned to alternative housing systems (i.e., enriched cages; non-cage housing) within 8 years.

In addition to the physical and structural housing changes that will have to be undertaken, this Code also considers other elements that are important to bird welfare. Alternative housing systems to which hens will be moved present complex welfare trade-offs that are addressed in this Code. For example, significant changes to pullet rearing environments are necessary to support hen welfare in non-cage housing systems in layer barns. In addition, new management practices in layer barns will have to be learned, and additional labour will likely be required to ensure that hen health and welfare needs are met.

Perhaps one of the most significant undertakings of this Code involves the inclusion of specifications for the alternative housing systems to which hens will be transitioned. A great deal of thought and consideration was given to the development of this Code to ensure that the welfare needs of hens are met regardless of the housing system utilized. While increasing space and allowing for more natural behaviour, alternative housing may not result in the desired welfare improvements if the housing is not properly constructed, maintained, and managed. This Code contains robust housing and management standards for alternative housing systems that the Code Development Committee (CDC) believes jurisdictions outside of Canada can also reference.

Finally, the transition strategy that the CDC has developed represents an organized approach that allows the industry to phase out conventional cages in an orderly manner that is practical, feasible, cost-efficient for farmers and consumers, and ensures that the market demand for eggs can continue to be met, while significantly improving the welfare of millions of hens.

This Code is a guideline for the care and handling of pullets and laying hens, and applies to both regulated and unregulated egg production, including backyard flocks. It plays an important role in the industry's efforts to assess animal care on farms across Canada. This Code does not apply to egg or meat processing, or transportation beyond the farm gate. In addition, it does not apply to breeders or hatcheries; however, it is expected that practices at hatcheries and layer breeder facilities will be included in the next Code revision. This will encompass a review of research on in-ovo sexing, which is regarded as both a welfare and economical benefit. In the meantime, the egg industry continues to support research on in-ovo sexing with the goal of finding a commercially available solution. All applicable provincial and federal acts and regulations continue to take precedence.

Glossary

The following terms and definitions refer only to how the terms are used in this document.

Accessible Feed Space: Amount of available feed trough space, as measured in linear inches, provided to each bird. Depending on the location of the trough, available space can be provided on one side of the trough or on both sides.

All-In/All-Out: A production strategy whereby all birds are moved into and out of facilities and/or between production phases.

Ammonia: A noxious gas common in animal production that forms during breakdown of nitrogenous wastes in animal excrement.

Aviary: Refer to Multi-Tier.

Beak Treatment: A non-invasive procedure that uses specialized equipment (i.e., infra-red) that results in blunting of beaks.

Beak Trimming: Removal of a portion of the beak, usually with a specialized instrument that simultaneously cuts and cauterizes (e.g. hot blade).

Bedding: Loose material such as wood shavings or chopped straw that is added to housing environments

Biosecurity: Measures designed to reduce the risk of introduction, establishment, and spread of animal diseases, infections, or infestations to, from, and within an animal population.
Bird: A chicken used in egg production of any age, size, or weight.

Brooder: A heated area of the barn to which chicks can go for warmth. See also Dark Brooder.

Cages with Furnishings: Enriched or furnished cages that were installed prior to this Code's effective date and that do not meet this Code's final requirements for Enriched Cages.

Cannibalism: A behaviour problem in which a bird pecks and consumes the flesh of another bird**.**

Carts: Portable wheeled devices that are used to move birds in an upright position from barns to transport vehicles. They can also be referred to as dolly or pullet carts.

Chick: A young bird from the time of hatch up until the point it is fully feathered, which is usually between 14 to 21 days of age.

Competent: Demonstrated skill and/or knowledge in a particular topic, practice, or procedure that has been developed through training, experience, or mentorship, or a combination thereof.

Container: Portable enclosures that are used to transport pullets and end-of-lay hens**.**

Conventional Cage: A wire mesh enclosure for housing laying hens with equipment for provision of water, automated feeding, and egg collection. Also referred to as unfurnished cage.

Crate: A portable container designed and constructed specifically for transporting pullets and hens.

Dark Brooder: A warm, dark, enclosed resting area for chicks that is clearly distinct from surrounding well-lit activity areas**.**

Dark Period: No more than 20% of the light intensity of the light period.

Dust Bathing: A special sequence of behaviour patterns that functions to clean the feathers and improve their insulative value. Depending on the substrate, it may also remove parasites from plumage.

End-of-Lay Hens: Egg laying poultry that have reached a timed point in their egg-laying cycle beyond which productivity significantly declines and they are removed from production.

Enriched Cage: A wire mesh enclosure outfitted with perches, nest area, scratch area, and more head room compared to a conventional cage; group sizes in furnished cages can range from 10 to over 100 hens, depending on the model. Also referred to as furnished cage or colony cage.

Enrichment: Enhancement of a bird's physical or social environment that adds complexity.

Euthanasia: The process of ending the life of an individual bird in a way that minimizes or eliminates pain and distress. It is characterized by rapid, irreversible unconsciousness (insensibility), followed by prompt death.

Feather Pecking: A behaviour problem in domestic birds that involves a bird pecking (or plucking) the feathers from flock mates or herself.

Forage/Foraging: The behaviour patterns involved in searching for and consuming food.

Free-Range: A system where laying hens are allowed access to an outdoor pasture or range area.

Free-Run: A system where birds roam freely inside a barn but do not have access to the outdoors. Also referred to as barn systems.

Hen: A female domestic fowl that has reached sexual maturity (i.e., begun to lay eggs).

Insensible/Insensibility: The point at which an animal no longer has the ability to perceive and respond to its environment (e.g. light).

Litter: The combination of bedding and/or bird excreta, feathers, feed, dust, and other materials on floors of bird housing systems.

Litter Space: A solid floor surface with the ability to hold or contain litter/substrate.

Moulting: A natural seasonal event in which birds substantially reduce their feed intake, cease egg production, and replace their plumage. Induced or controlled moulting is a process that simulates natural moulting that extends the productive life of hens (1).

Multi-Tier: A non-cage system where nest, perching, and food and water resources are located on multiple elevated tiers. Also referred to as aviary systems or aviaries.

Non-Cage Systems: Systems that include single-tier (free-run, floor, or barn), multi-tier (aviary), and free-range, and do not use cages to house birds.

Non-Penetrating Captive Bolt: A specially designed device used for stunning and euthanasia that propels a blunt bolt with great force which, when applied in the correct position, causes immediate loss of sensibility.

On-Farm Depopulation: An on-farm practice that involves killing entire flocks or large numbers of birds.

Osteoporosis: A condition involving loss of bone mass leading to bone fragility and risk of fracture.

Perch: A structure, usually in the form of a narrow rod, that allows hens to wrap their toes around it and that is elevated a minimum of 1.3 cm (0.5 in) above the floor, which birds can use to sit or roost above the floor.

Pullet: A young female domestic fowl from the point it is fully feathered and that has not yet reached sexual maturity (i.e., begun to lay eggs).

Ramp(s): A ladder or narrow piece of plastic or wire mesh affixed to a tier frame at varying heights and at angles that do not exceed 45 degrees.

Range: The outdoor area to which birds may have access from indoor production systems.

Rearing: The phase during which chicks and pullets are cared for prior to reaching sexual maturity (i.e., begun to lay eggs).

Re-Tooling: A major renovation or overhaul of existing housing systems and/or strutures that is not part of normal or routine repair or maintenance. The addition of enrichments or furnishings that were not included when housing systems were installed is not considered to be re-tooling.

Roost: When a bird rests or sleeps on a perch.

Shackle Carts: Portable wheeled devices that are used to move birds in an inverted position from barns to transport vehicles.

Single-Tier: A non-cage system where nests, perches, and feed and water resources are located on only one level. Also referred to as floor housing.

Terrace: An additional flat plastic or wire platform in non-cage systems that may or may not be located within the main tier structure that birds use to move between tiers.

Tier: Any fixed floor level that is above the ground floor and is located directly above a manure belt or manure storage.

Training: The act that aims to impart skills and/or knowledge in a formal or informal manner (e.g. through mentoring) that results in the recipient's understanding and/or ability to perform assigned tasks.

Unfit for Transport: A bird with signs of infirmity, illness, injury or of a condition that indicates that it cannot be transported without suffering (32).

Unfurnished Cage: Refer to *Conventional Cage*.

Useable Space for Chicks and Pullets: Includes the main floor, litter area, elevated terraces, plus any elevated tiers with a height of at least 45.0 cm (17.7 in) to which birds have continual access. Space under offset elevated terraces counts as useable floor space.

Useable Space for Laying Hens: Includes the main floor and litter area, plus any elevated floor areas/ tiers with a height of at least 45.0 cm (17.7 inches) to which birds have continual access, but excludes nest areas and any outdoor area, if applicable. Pertains to non-cage systems.

1 Pullet Housing and Rearing

While this section covers some aspects of pullet rearing, all other sections in this Code, with the exception of *Section 2: Housing Systems for Layers*, apply to all birds, including chicks and pullets.

1.1 Pullet Housing

All housing systems for pullets include both welfare benefits and welfare challenges. In all systems, welfare improvements can be made by paying close attention to the specifics of the housing design, management practices, and choice of strain (2). It is critical that pullets destined for aviary systems during the laying phase be reared in systems with similar features. This helps to ease the transition to the lay barn, reduces problems associated with fearfulness, and enhances physical development (2).

Birds kept longer in rearing systems with litter need more litter space as they approach start of lay to support behavioural changes that occur at the start of egg production.

1.1.1 Housing Equipment: Design and Construction

Housing needs to protect the birds from anticipated environmental conditions, including normally-expected changes in temperature and precipitation, as well as predatory animals. Premises and equipment need to be maintained in a clean and orderly fashion to eliminate any refuge for rodents, wild birds, and other animals that could introduce diseases to the flock..

REQUIREMENTS

Materials used in the construction of housing and equipment to which birds have access must not be harmful or toxic to the birds, and must be able to be thoroughly cleaned and maintained.

RECOMMENDED PRACTICES

a. when designing barns and equipment, take into consideration how birds will be inspected and handled in all areas..

1.1.2 Flooring

Layer pullets may be reared on wire, slats, or litter. Litter is preferred for rearing chicks. Floor coverings provide foot support, offer opportunities for natural behaviours such as scratching, foraging, and dust bathing, and promote optimum intestinal health.

REQUIREMENTS

Flooring must be designed, constructed, and maintained in a manner that supports the birds' feet and does not contribute to trapping, injuries, or deformities to the birds' legs, feet, and/or toes.

Housing system floors must be designed and maintained to prevent manure from birds in upper levels from dropping on birds enclosed directly below.

Existing flow-through pullet cage systems must be replaced by January 1, 2020.

RECOMMENDED PRACTICES

a. ensure that the gaps between floor wires do not exceed 2.5 cm (1.0 in)
b. use appropriate floor covering until birds reach a size suitable for the flooring
c. choose a floor covering that promotes foraging and scratching (e.g. newspaper, paper plates, fibre egg trays).

1.1.3 Feeders and Waterers

Chicks and pullets have access to feed at all times so it is not necessary for all birds to feed simultaneously. When calculating the feed space, the age of the birds, their body weight and other factors need to be taken into consideration. The feed trough provides access on one side or two sides, depending on the design of the housing. The length of the feeder trough will depend on whether birds can access it only on one side or on both sides.

2025 Amendment: Only the round feeder space requirements have been amended. Research shows that limited feeding space can result in competition and aggression at the feeders (43). If competition and/or aggression is observed, steps should be taken to mitigate competition (e.g., management practices) or increase feed space on a per-bird basis (e.g., add feeders; remove birds).

Scientific evidence shows that synchronization of feeding behaviour results in a maximum of 70% of hens or pullets eating at once, especially in large groups (43).

REQUIREMENTS

Feed space and waterers (e.g. cups, nipple drinkers) must be provided as indicated in Table 1.1.

All birds must have access to at least 2 waterers (e.g. cups, nipple drinkers) in case one breaks down.

Automated feeding systems must be designed and utilized in ways that minimize the likelihood of chicks getting caught in them.

Table 1.1 - Minimum Feed Space and Maximum Birds per Waterer.

Bird Type/Age	Minimum Linear Feeder Space/Bird	Minimum Round Feeder Space/Bird	Minimum Water Space/ Bird	Maximum Number of Birds per Waterer
Chicks: 0 to 2 weeks	1.0 cm (0.4 in)	0.5 cm (0.2 in)	**Linear:** 2.5 cm (1.0 in) **Round:** 2.0 cm (0.8 in)	30
Pullets: 2 to 8 weeks	2.0 cm (0.8 in)	0.9 cm (0.4 in)		24
Pullets: 8 weeks to layer barn	4.0 cm (1.6 in)	1.8 cm (0.7 in)		12

RECOMMENDED PRACTICES

a. limit the distance that birds need to travel to access feed and water to 8.0 m (26.2 ft)
b. monitor feeding behaviour for competition and aggression and add feed space on a per-bird basis if either is observed
c. incorporate management strategies to ensure that feed augers are triggered regularly to ensure that fresh feed is available in all pans (e.g., lighting, manually triggering) when round feeders are used.

1.1.4 Space Allowance

Space allowance is typically measured and described as a minimum amount of useable area (cm^2 or sq in) allocated to each bird. Space should be provided based on the age and expected size/weight of the birds when they are transferred to the layer barn. Space allowance needs to increase as the birds approach their mature weight. Therefore, space allowances for chicks, young pullets, and older pullets need to be adjusted as the birds grow.

When calculating space allowances in multi-tier rearing systems, the space beneath the first elevated tier is not considered useable space, unless the height allows birds to stand upright and birds have continuous access to the area. Refer to the *Glossary* for the complete definition of *Useable Space for Chicks and Pullets.*

2025 Amendment: Space allowances have been amended for pullets that are older than 8 weeks and housed in multi-tier systems only (refer to Table 1.5).

This amendment is intended to address the immediate need of producers who are considering rebuilding or replacing pullet housing that was in use prior to the amendment. As minimum space allowance requirements are a critical factor when designing barns, this amendment will only establish a timeline to increase minimum pullet space allowances for new holdings for which the building process commenced after the publication date of this amendment.

While the minimum space allowance requirement will apply to all holdings at some point in the future, the transition timeline for barns built before the amendment publication date will be decided by the Code Committee that is established to oversee the full Code update in or around 2028. At that time, it is expected that additional data will be available to help inform that decision, ensuring that housing conversions are managed responsibly with consideration for animal health, welfare, productivity, and the ongoing demand for eggs. In the meantime, pullet growers are strongly encouraged to increase space allowance over that currently required where feasible for pullets housed in multi-tier systems from 8 weeks of age.

Research shows that the physical space occupied by pullets is different for brown and white strains (43). At 18 weeks of age, the area covered during standing and sitting, respectively, averaged 434.5 cm^2 (67.3 sq in) and 456 cm^2 (70.7 sq in) for brown-feathered strains, and 361 cm^2 (56.0 sq in) and 380 cm^2 (58.9 sq in) for white-feathered strains (43).

Pullets that are transitioned to the layer barn after 17 weeks of age are at greater risk for poor welfare due to physiological and behavioural changes associated with the onset of lay (e.g., risk of smothering, egg peritonitis, mislaid eggs). For that reason, a new Recommended Practice has been added and elevated (Table 1.6) to prominently reinforce the importance of providing additional space for birds that remain in the pullet barn after 17 weeks of age. It is expected that this Recommended Practice to increase minimum space allowance for older pullets will become a Requirement when the full Code is updated in or around 2028.

REQUIREMENTS

Birds must be able to stand fully in an upright position within the enclosure.

Each bird must be provided with minimum space allowances as outlined in:

- ***Table 1.2 (Pullet Cages)***
- ***Table 1.3 (Multi-Tier Rearing Systems to 8 weeks of age).***

REQUIREMENTS (continued)

For Multi-Tier Rearing Systems installed prior to August 1, 2025, each bird must be provided with a minimum space allowance and applicable litter space as outlined in Table 1.4 (Multi-Tier Rearing Systems from 8 weeks of age – Barns in use prior to August 1, 2025).

For Multi-Tier Rearing Systems for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after August 1, 2025, each bird must be provided with a minimum space allowance and applicable litter space as outlined in Table 1.5 (Multi-Tier Rearing Systems from 8 weeks of age – New Construction).

In Single-Tier Rearing Systems, each pullet from 8 weeks of age until transfer to the laying barn must be provided with a minimum of 696.8 cm² (108 sq in / 0.75 sq ft) of useable space.

Table 1.2 - Minimum Required Space Allowance for Chicks and Pullets housed in Pullet Cages (Per Bird).

Bird Type/Age	Minimum Space Allowance (Per Bird)	
Chicks: 0 to 2 weeks	64.5 cm^2	10.0 sq in
Pullets: 2 to 8 weeks	129.0 cm^2	20.0 sq in
Pullets: 8 weeks to layer barn	283.9 cm^2	44.0 sq in

Table 1.3 - Minimum Required Space Allowance for Chicks and Pullets while enclosed in Multi-Tier Rearing Systems to 8 weeks of age (Per Bird).

Bird Type/Age	Minimum Space Allowance (Per Bird)	
Chicks: 0 to 2 weeks	64.5 cm^2	10.0 sq in
Pullets: 2 to 8 weeks	129.0 cm^2	20.0 sq in

Table 1.4 - Minimum Required Space Allowance for Pullets housed in Multi-Tier Rearing Systems from 8 weeks of age to layer barn (Per Bird) – Barns in use prior to August 1, 2025.

Pullet Age	Total Minimum Useable Space		Minimum Space Allocated to System		Minimum Space Allocated to Litter	
8 weeks to layer barn	342.0 cm^2	53.0 sq in	283.9 cm^2	44.0 sq in	58.1 cm^2	9.0 sq in

Table 1.5 - Minimum Required Space Allowance for Pullets housed in Multi-Tier Rearing Systems from 8 weeks of age to layer barn (Per Bird) – New Construction or Re-Tooling initiated after August 1, 2025.

Pullet Age	Total Minimum Useable Space		Minimum Space Allocated to System		Minimum Space Allocated to Litter	
8 to 17 weeks	464.5 cm^2	72.0 sq in	283.9 cm^2	44.0 sq in	141.9 cm^2	22.0 sq in
17 weeks to layer barn	464.5 cm^2	72.0 sq in	283.9 cm^2	44.0 sq in	141.9 cm^2	22.0 sq in

RECOMMENDED PRACTICES

Table 1.6 - Minimum Recommended Space Allowance for Pullets housed in Multi-Tier Rearing Systems (Per Bird).

Pullet Age	Total Minimum Useable Space		Minimum Space Allocated to System		Minimum Space Allocated to Litter	
8 to 17 weeks	464.5 cm^2	72.0 sq in	283.9 cm^2	44.0 sq in	141.9 cm^2	22.0 sq in
17 weeks to layer barn	541.9 cm^2	84.0 sq in			180.6 cm^2	28.0 sq in

a. move pullets that are reared in multi-tier systems to layer barns when they reach maturity (~17 weeks of age), since the risk of smothering increases after they begin to lay eggs
b. for pullets that are transitioned to the layer barn after 17 weeks of age, provide a minimum of 541.9 cm^2 (84.0 sq in) of useable space per bird. Refer to Table 1.6
c. increase litter space for pullets that are approaching maturity (i.e., egg production)
d. increase space allowances for pullets when finishing will take place during hot weather periods
e. restrict chicks housed in single-tier rearing systems to a small area of the barn that is close to feed, water, and heat during brooding.

1.1.5 Special Considerations for Multi-Tier Rearing Systems

Birds can be restricted from accessing space beneath the first elevated tier to train them to use the system during both the rearing and laying phases. Chicks and pullets that "hide" under the system may not access feed and water as often as they need to, and as a result may become compromised.

Additional space is necessary from 17 weeks of age to prevent smothering that can result as the litter area becomes attractive close to the onset of lay.

REQUIREMENTS

Tiers must be arranged to prevent droppings from falling directly on levels below.

The number of tiers in a vertical plane (i.e., directly above each other) must not exceed 3 where the ground level is not considered to be one tier.

Feed and water must be provided on more than one elevation of the system, and must not be provided on the ground level.

RECOMMENDED PRACTICES

a. provide sufficient elevated space in multi-tier rearing systems to allow birds to roost and rest and so that they learn to come off the floor at night
b. provide lighting beneath the first elevated tier when birds are provided access to this area
c. provide sawdust, scratch paper, or suitable substrate for foraging to chicks from 1 day of age
d. increase litter space for pullets that are approaching maturity (i.e., egg production)
e. move pullets that are reared in multi-tier systems to layer barns when they reach maturity (~17 weeks of age), since the risk of smothering increases after they begin to lay eggs
f. utilize strategies to encourage birds to use platforms (e.g., locate feed/water on platforms).

1.1.6 Perches

Birds have to learn to perch (2). Depending on perch height, chicks begin perching at around 7 to 10 days of age, and the amount of time spent perching steadily increases over time (2,3). Pullets are more likely to use perches if they are introduced to them at an early age (3). Conversely, birds reared without perches have difficulty adapting to non-cage systems during lay (2).

Access to perches during rearing has been shown to increase nest use and decrease cloacal cannibalism during lay (2). Hens that were reared with perches have stronger bones (2). The inclusion of perches during the rearing phase promotes bird activity, can help to develop bone strength, can assist with the birds' ability to adapt when they are transferred to the laying barn, and can assist in reducing the number of floor eggs during the laying phase (2).

Access to perches and more complex environments (e.g. ramps, ladders, elevated terraces) during rearing is critical for birds destined for non-cage multi-tier systems, because feed and water is provided on elevated tiers. Perching is beneficial for birds destined for all non-cage systems; however, in single-tier systems, food and water are provided at ground level. Communication and coordination between pullet growers and egg farmers can help ease the transition to the layer barn. Refer to *Section 5.1: Pullet Sourcing and Trasition to Lay*.

The following requirements apply to any type of pullet housing system where perches are provided, except where specific housing systems are specified.

REQUIREMENTS

Perches must be provided to chicks reared in multi-tier systems from 1 day of age.

Terraces and/or elevated perches at varying heights must be provided from no later than 8 weeks of age in multi-tier rearing systems.

Perches must be constructed of materials that are easily cleaned and do not harbour mites.

Perches must be designed to prevent injury to pullets that are mounting or dismounting as well as to any pullets nearby.

Perches must be positioned to prevent trapping and allow access to feed and water.

Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them.

RECOMMENDED PRACTICES

a. provide perches to pullets that are destined for single-tier laying systems
b. cap hollow ends of perches
c. provide terraces and elevated perches at varying heights as early as possible in multi-tier systems.

1.2 Receiving and Brooding Chicks

Special care needs to be taken to ensure that newly-arrived chicks settle in well to their new environments. They need to be protected from abrupt changes in temperature and be able to locate feed and water.

Feedback on chick condition, mortality, and performance can help hatcheries evaluate their management and transport protocols.

Evaluation criteria could include:

- alertness: an alert chick has wide-open bright eyes and appears curious
- vigour: a vigorous chick is instantly active when disturbed and shows no signs of weakness or unthriftiness
- condition: a chick in good condition will be firm. The fluff will not be matted, there are no signs of dehydration, and the navel is healed. An unhealed navel can become an early access route for bacterial infections. Chicks must be handled in order to be evaluated for condition
- body temperature: the normal body temperature for chicks is 40.0 – 40.7°C (104.0 – 105.3°F)
- behaviour: chicks should not show signs of distress (e.g. huddling, open-mouth breathing, excessive vocalization)
- normalcy: a normal chick has no apparent deformity or abnormality such as twisted toes or beaks, crippled or straddled legs, etc.

REQUIREMENTS

Facilities must be prepared (i.e., heat, clean, feed, water, bedding) in advance of receiving chicks so that they can be placed promptly after arrival.

Farm personnel must be present at the time of delivery and placement, and must assess the physical condition of the chicks.

Steps must be taken to prevent chicks from becoming chilled or overheated during unloading and brooding.

All chicks must be kept, treated, and handled in ways that prevent injury and minimize stress.

RECOMMENDED PRACTICES

a. handle boxes of chicks gently and in a level position
b. inspect chicks immediately upon arrival. Document any problems and provide feedback to the hatchery
c. provide supplementary feed and water sources (trays or paper) to ensure that chicks can locate feed easily. Remove supplementary water sources gradually as birds learn to drink from nipples
d. ensure that chicks can access water and that it is at the appropriate height and pressure
e. check chicks more than twice daily during brooding
f. increase the frequency of monitoring if any of the following are observed: huddling or piling, inactivity, high early mortality, or problems with equipment
g. prevent chicks from crowding or piling on top of each other in the corners of floor pens
h. confirm brooding area temperatures at chick level.

1.3 Lighting

Supplemental heat is essential in maintaining chicks' body temperature during the first few weeks of life when natural brooding is not utilized. However, the use of radiant heat lamps results in constant exposure to light. Continuous light can negatively impact eye development of newly hatched chicks (4) and disrupts rest, which affects the synchronization of chicks' activities (5).

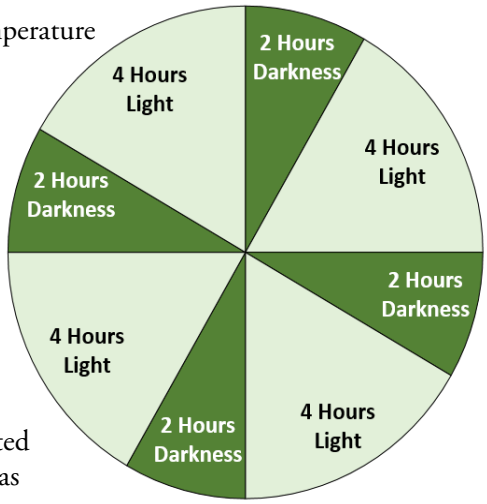

Figure 1.1: Example of an Intermittent Lighting Program

Some chicks continue to rest after arrival from the hatchery, while others seek out food and water. An intermittent lighting program (refer to Figure 1.1) divides the day into resting and activity phases and can assist with synchronising chick activity to improve food and water intake as weaker chicks are stimulated by stronger ones to eat and drink (6). Synchronizing activity has been shown to promote better rest, and can reduce the development of feather pecking by separating active and inactive birds (2). In addition, an intermittent lighting program typically results in more uniform flock behaviour (5) as well as lower mortality rates.

In commercial settings, the positive welfare outcomes associated with brooding by hens can be achieved by providing simulated brooding cycles of light and dark periods, and/or by providing dark brooders,which are warm, dark, and enclosed areas that may simulate the effects of a brooding hen (2). Dark brooders have been found to have long-term preventative effects on feather pecking and cannibalism, and can improve behavioural synchrony between birds, reduce disturbances during resting, and result in calmer birds (3).

Ideally, the time of day for start of the light period (lights on) during rearing should be matched to the start of the light period in the laying barn (2). Simulating the gradual oncoming of night (dusk) by gradually lowering lights at night will help pullets in non-cage systems locate a suitable perch for the night, or move up onto tiers while visually capable (7). In addition, gradually increasing lighting in the morning (e.g. using dawn to dusk lighting) can enhance welfare by allowing birds to gradually wake up and leave perches.

Communication and coordination between pullet growers and egg farmers can help ease the transition to the layer barn. Refer to *Section 5.1: Pullet Sourcing and Transition to Lay* for more information.

REQUIREMENTS

Chicks must be provided with a minimum of 2 consecutive hours of darkness in each 24 hour period.

The dark period must be gradually increased to a total minimum of 6 hours in each 24 hour period by 2 weeks of age.

Chicks must be provided with a minimum of 16 hours of light in each 24 hour period up to 2 weeks of age.

Chicks must be provided with light intensities of at least 20 lux (2 foot candles) for at least the first 7 days that allow them to easily locate feed and water.

RECOMMENDED PRACTICES

a. simulate brooding cycles for chicks by implementing cycles of light and dark periods, and/or by providing dark brooders. Utilize an intermittent light/dark schedule for chicks (e.g. 2 hours darkness followed by 4 hours light) to simulate a brooding cycle and to synchronize activities.

1.4 Pullet Rearing and Reducing Fear

The early experiences of chicks and pullets affect the welfare of the young bird and can impact the health, behaviour, fearfulness, and welfare of the laying hen (2). Fear can impair the ability of birds to adapt to new environments, which can make it difficult for them to utilize new resources or to interact with other birds or people (2). Moreover, fearfulness in young birds is also associated with feather pecking behaviour.

Consistent management practices during both the rearing and laying phases will help birds adapt to the new barn (2).

Strategies to reduce fear during rearing include providing complex rearing environments, regular exposure to humans, gentle handling, and intermittent lighting strategies or the use of dark brooders (2). Fearfulness can also be reduced by providing enrichments such as rattles, balls, colourful plastic bottles, strings, or drawings on the wall (8) as well as exposing chicks to a radio playing a human voice (9)

RECOMMENDED PRACTICES

a. develop protocols to ensure that stockpersons have frequent and calm interactions with chicks and pullets regardless of what type of housing system is used
b. give an audible signal to chicks and pullets before entering the barn (e.g. knock lightly on door)
c. provide enrichments to chicks and pullets, which may help to reduce fear (e.g. play music, hang objects).

2 Housing Systems for Layers

All housing systems for hens include both welfare benefits and welfare challenges. In all systems, welfare improvements can be made by paying close attention to the specifics of the housing design, management practices, rearing conditions, and choice of strain (2).

Hens are motivated to nest, forage, perch, and dust bathe (2). Other natural comfort behaviours include movement and activities such as stretching legs and wings (2). It is important that rearing environments are taken into consideration when transitioning to the layer barn. Refer to *Section 5.1: Pullet Sourcing and Transition to Lay* for more information.

2.1 Housing and Equipment: Design and Construction

Housing needs to protect the birds from anticipated environmental conditions, including normally-expected changes in heat, cold, and precipitation, as well as predatory animals. Premises and equipment need to be secure and maintained in a clean and orderly fashion to manage the risk of disease. It is also important to design housing systems in such a manner that permits thorough inspections of birds, access to sick and injured birds, as well as the ability to remove dead birds. It is important that barns are of sound construction and well maintained. Smooth, hard, and impervious surfaces will enable effective cleaning and disinfection (10).

REQUIREMENTS

Materials used in the construction of housing and equipment to which birds have access must not be harmful or toxic to birds, and must be able to be thoroughly cleaned and maintained.

Openings and access points must permit placement of pullets and removal of full grown layers of all breeds without injury.

RECOMMENDED PRACTICES

a. when designing barns and equipment, take into consideration how birds will be inspected
b. site barns on well-drained land
c. use concrete to construct ground-level floors
d. design, construct, and maintain buildings to prevent access by predators and wild birds, and to deter rodents
e. utilize migration fences to divide large flocks into smaller groups.

2.2 Flooring

There are a variety of flooring types used for layer hens in both cage and non-cage systems. The flooring design and construction, as well as cleanliness, can have an impact on hen welfare from both health and behaviour perspectives. Risks of foot problems are linked to all types of housing systems, but the type and severity can differ between systems.

REQUIREMENTS

Flooring must be designed, constructed, and maintained in a manner that does not contribute to injuries or deformities to the birds' legs, feet, and/or toes.

All slatted, wire, or perforated floors must be constructed to support the forward facing claws.

The slope of any slat or wire floor or solid surface that is included in the useable space calculation must not exceed 8 degrees (14%).

Housing system floors must be designed and maintained to prevent manure from birds in upper levels from dropping on birds enclosed directly below.

RECOMMENDED PRACTICES

a. ensure that the gaps between slats and wire do not exceed 2.5 cm (~1.0 in).

2.3 Feeders and Waterers

Hens have access to feed at all times so it is not necessary for all birds to feed simultaneously. When calculating the feed space, the age of the birds, their body weight, and other factors need to be taken into consideration. The feed trough provides access on one side or two sides, depending on the design of the housing. The length of the feeder trough will depend on whether birds can access it only on one side or on both sides. If growth or egg production rates are lower than expected, it may be because there are too many birds for the available space, resulting in birds crowding at the feeders.

2025 Amendment: Only the round feeder space requirement has been amended. Research shows that limited feeding space can result in competition and aggression at the feeders (43). If competition and/or aggression is observed, steps should be taken to mitigate competition (e.g., management practices) or increase feed space on a per-bird basis (e.g., add feeders; remove birds).

Scientific evidence shows that synchronization of feeding behaviour results in a maximum of 70% of hens or pullets eating at once, especially in large groups (43).

REQUIREMENTS

Accessible feed space must be provided at a minimum rate of 7.0 cm (2.8 in) per bird for linear feeders[1] and 2.8 cm (1.1 in) for round feeders.

All birds must have access to:

- ***a minimum of one waterer for every 12 birds***
- ***at least 2 water sources (e.g., nipple drinkers, cups), or a minimum of 1 bell drinker/100 hens, or a minimum of 1.3 linear cm (0.5 in) of water trough space per hen when straight troughs are used[2].***

RECOMMENDED PRACTICES

a. provide additional accessible feed space where feeding strategies (e.g., feeders are not run during peak nesting hours) are used that result in more hens feeding simultaneously
b. position feeders and waterers in such a way to prevent birds from defecating in them

[1] Accessible feed space is calculated on a per-bird basis and can include only one side of the trough, or both sides if the trough is located in such a way that birds have access to it from both sides.
[2] Perimeter space for round waterers can be calculated by multiplying linear space by 0.8.

RECOMMENDED PRACTICES (continued)

c. use well-designed drinkers, and ensure that they are used and operated in such a way so as to avoid leaks and excessive spillage
d. position nipple drinkers and cups a minimum of 15.0 cm (5.9 in) apart from each other on each water line
e. add more feed space if over-crowding and/or competition at the feeders is observed
f. set feed trough heights so that birds do not have to perch to feed (i.e., can stand on the floor).

2.4 Enriched Cage and Non-Cage Housing Systems

Furnishings and enrichments provide opportunities for hens to perch, nest, forage, and dust bathe, all of which are considered natural behaviours that hens are strongly motivated to perform (2).

Also known as furnished cages, enriched cages are larger than conventional cages, and can house from 10 to 100 hens in each cage. Enriched cages provide hens with more space and the resources to engage in a wider range of natural behaviours (2). Existing furnished or enriched cages may not meet the final requirements of this Code, and as such, are referred to as Cages with Furnishings.

Non-cage systems, also referred to as free-run or cage-free systems, typically house larger groups of hens than cage systems, and may or may not be combined with access to the outdoors. Indoor non-cage systems may consist of a single-tier or multi-level tiers, which can also be referred to as multi-tier or aviary systems. Indoor systems protect birds from predators and the outside environment.

There are welfare trade-offs associated with each type of housing system. Hens raised in non- cage systems generally have greater freedom of movement and have more opportunity to engage in natural behaviours than cage-housed birds. However, non-cage systems need to be carefully managed to limit risks of disease, injuries, injurious pecking (11), and mortality (2).

Enriched cages generally maintain the health and hygiene benefits associated with conventional cages while providing amenities that allow hens to nest and perch and space to move around and stretch wings. However, while existing enriched cages offer some opportunity for foraging and dust bathing, they do not fully support that behaviour (2). In all systems, housing design, management, rearing conditions, and choice of strain are all factors that impact hen welfare (2).

The industry is committed to continuing to support research so that hens in all housing systems are provided with opportunities to express natural behaviour and health and mortality risks are minimized.

2.5 Transitioning from Conventional Cages

Unfurnished, or conventional, cages are enclosures with wire mesh and sloping floors that typically house 4 to 8 hens. These cages provide a controllable environment that protects hens from a range of health and injury problems. However, hens are restricted from engaging in many natural behaviours due to limited space and amenities (11), and, as a result, conventional cages have begun to be phased out in Canada.

In order to facilitate a smooth changeover, transitional and final requirements are included in each of the following sub-sections as a way to improve the welfare for all hens regardless of the housing system type that is utilized. This approach recognizes that there may be structural and other challenges that may impede the ability of producers to refurbish existing installations to this Code's final housing standards until such time that barns are completely renovated or rebuilt. As such, the interim or transitional allowances apply to existing installations up until the time that the barn is renovated or replaced, unless otherwise specified.

For more information, refer to *Appendix A: Transitional and Final Housing Requirements for Enriched Cages* and *Appendix B: Transitional and Final Housing Requirements for Non-Cage Housing.*

The following sections detail the effective dates for all transitional requirements. Some requirements (identified by "**(F)**"at the end of the requirement) are also included in the Final Requirements. Inclusion in the Transitional Requirements mandates modifications to existing housing systems prior to the final transition date.

The transition of Canada's hens from conventional to enriched housing systems is a complex undertaking that requires a nationally coordinated approach with participation and support from industry and all stakeholders. For example, to support hen welfare needs in enriched systems in layer barns, significant changes to pullet rearing housing systems are also necessary. In addition, since egg farmers will have to take hens out of production while new housing systems are being built, there is a need to coordinate housing conversions to ensure that market demand for eggs can continue to be met.

In addition, alternative housing systems to which hens will be moved present complex welfare trade- offs that must be considered from the perspectives of the housing structures, the furnishings, and management. This Code represents the first time in Canada that housing standards for enriched housing systems are clearly defined so that egg producers have both guidance and flexibility in meeting the welfare needs of hens.

The industry commits to a minimum of 85% of hens to be transitioned from existing conventional cage systems to alternative housing systems that meet the requirements of this Code within 15 years, and will aim to transition 100% of hens within the same time frame. It is expected that 50% of birds will be transitioned within 8 years. The transition will be overseen by the industry and its stakeholders, and reviewed within 10 years to assess and evaluate the status of the transition.

If any hens remain in conventional cages after 15 years, greater space allowance that represents as much as a 34% increase in space must be provided. Hens removed from these systems will move to enriched housing systems that meet the requirements of this Code.

The transition strategy that the CDC has developed represents an organized approach that allows the industry to phase out conventional cages in an orderly manner that is practical, feasible, cost-efficient for farmers and consumers, and ensures that the market demand for eggs can continue to be met.

The industry is committed to supporting ongoing and new research into providing birds with greater freedom of movement and more opportunities for engaging in natural behaviour, and to implement practical solutions as they become available. The outcomes of these shared endeavours will inform the next Code revision and/or possible amendments to this Code in the interim.

REQUIREMENTS

All housing systems to which hens are transitioned must support nesting, perching, and foraging (pecking and scratching) behaviour.

If any hens have not been transitioned from conventional cages by July 1, 2031, each of those hens still kept in conventional cages must be provided with a minimum space allowance in those systems of 580.6 cm² (90.0 sq in), effective July 1, 2031.

All hens must be housed in enriched cage or non-cage housing systems that meet this Code's requirements by July 1, 2036.

Enriched cages installed after January 1, 2032, must be designed to include amenities that provide hens with improved opportunities to forage and dust bathe.

2.5.1 Space Allowance

Space allowance refers to the amount of space that is available on a per-bird basis. Sufficient space allowance provides hens with the opportunity to move around and engage in comfort behaviours (e.g. stretching, preening), as well as provides unrestricted opportunities for nesting, foraging, and dust bathing (2). When calculating useable space allowances for non-cage systems, interior measurements are used and areas allocated for nests are not included.

Currently, there are no clear conclusions to draw on with respect to flock sizes and stocking densities for non-cage systems (2). System designs, distribution of hens within a system, and environmental conditions have a greater effect on bird welfare than group size and stocking density (2). However, as space allowances increase, hens are able to engage in a greater range of behaviour patterns (2). Floor space requirements vary considerably depending on breed, ambient temperature, and whether any or all of the floor consists of wire or wooden slats. In general, the most space is required in systems with 100% litter floors, and least where the floor is entirely wire or slats.

FINAL SPACE ALLOWANCE REQUIREMENTS

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- ***For Enriched Cage and Non-Cage housing, a minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level.***
- ***For Enriched Cages, each hen must be provided with a minimum of 750.0 cm² (116.25 sq in) of total space, including nests, of which 600.0 cm² (93.0 sq in) does not include nest boxes.***
- ***For Non-Cage Systems, each hen must be provided with the following minimum useable space allowance (which does not include nest space):***
  - ***Single-Tier – All litter barns: 1,900.0 cm² (294.5 sq in/2.05 sq ft)***
  - ***Single-Tier – Combination of wire, slats, litter: 929.0 cm² (144.0 sq in/1.0 sq ft)***
  - ***Multi-Tier – Combination of wire, slats, litter: 929.0 cm² (144.0 sq in/1.0 sq ft).***

TRANSITIONAL SPACE ALLOWANCE REQUIREMENTS[3]

Effective for flocks placed after April 1, 2017:

- ***For Enriched Cage and Non-Cage housing, a minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level. (F)***
- ***For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with a minimum space allowance of 580.6 cm² (90.0 sq in).***

Effective for flocks placed after January 1, 2020:

- ***For Conventional Cages installed prior to July 1, 2016, each bird must be provided with a minimum space allowance of 432.0 cm² (67.0 sq in) for white birds and 484.0 cm² (75.0 sq in) for brown birds.***
- ***For Non-Cage systems installed prior to April 1, 2017 that have at least 50% of the useable space as slats or wires, each hen must be provided with the following minimum useable space allowance (which does not include nest space):***
  - ***929.0 cm² (144.0 sq in/1.0 sq ft) if a minimum of 15.0 cm (5.9 in) of perch space per hen is provided, OR***
  - ***1,115 cm² (172.8 sq in/1.2 sq ft) if perch space of at least 7.6 cm (3.0 in) but less than 15.0 cm (5.9 in) per hen is provided.***

[3] The inclusion of "(F)" at the end of a requirement indicates a Final Requirement that applies to flocks placed after the stated transitional date.

TRANSITIONAL SPACE ALLOWANCE REQUIREMENTS[3] (continued)

Effective for flocks placed after January 1, 2022:

- ***For Enriched Cages, each hen must be provided with a minimum of 750.0 cm² (116.25 sq in) of total space, including nests, of which 600.0 cm² (93.0 sq in) does not include nest boxes. (F)***

2.5.2 Nesting

Nests are typically provided through the use of a curtained area or solid nest boxes. Both single bird nests and communal nests, which allow multiple hens to nest simultaneously, can be provided. Hens prefer smaller nests over larger communal nests (12). Competition for nest space depends on lighting programs, bird strain, as well as group size. For these reasons, a larger minimum nest space allowance is needed for non-cage systems to meet the birds' tendency towards more group nesting behaviour.

Hens in furnished cages may benefit from providing more than one enclosed area for nesting that is distinct from the scratch area (13).

Mechanized nest boxes, which are used in some housing systems, need to be designed and maintained to protect hens from injury.

FINAL NESTING REQUIREMENTS

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- ***The nest space must be enclosed on at least three sides to provide privacy and shading.***
- ***Where nest curtains are used, they must extend close to the floor (without impeding the flow of eggs).***
- ***The nest area must not contain drinkers, feeders, or perches.***
- ***The space between the nest area and the useable feed trough must be at least 15.2 cm (6.0 in).***
- ***The floor of the nest area must be covered with a surface that promotes nesting and prevents injury.***
- ***For Enriched Cages, each hen must be provided with nest space area at a minimum of 65.0 cm² (10.0 sq in).***
- ***For Non-Cage systems:***
  - ***Each hen must be provided with nest space area at a minimum of 83.2 cm² (12.9 sq in) [1.0 m² (10.8 sq ft) for each 120 hens]***
  - ***Nest space must not be included when calculating useable space allowance***

[3] The inclusion of "(F)" at the end of a requirement indicates a Final Requirement that applies to flocks placed after the stated transitional date.

TRANSITIONAL NESTING REQUIREMENTS[4]

Effective for flocks placed after April 1, 2017:

- ***For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with nest space area of a minimum of 40.6 cm² (6.3 sq in).***
- ***The nest space must be enclosed on at least three sides to provide privacy and shading. (F)***
- ***Where nest curtains are used, they must extend close to the floor (without impeding the flow of eggs). (F)***
- ***The nest area must not contain drinkers, feeders, or perches. (F)***
- ***The space between the nest area and the useable feed trough must be at least 15.2 cm (6.0 in). (F)***
- ***The floor of the nest area must be covered with a surface that promotes nesting and prevents injury. (F)***

Effective for flocks placed after January 1, 2020:

- ***For Non-Cage systems installed prior to April 1, 2017: (F)***
  - ***Each hen must be provided with a minimum nest space area of 83.2 cm² (12.9 sq in) [1 m² (10.8 sq ft) for each 120 hens]***
  - ***Nest space must not be included when calculating useable space allowance.***

Effective for flocks placed after January 1, 2022:

- ***For Enriched Cages, each hen must be provided with a minimum nest space area of 65.0 cm² (10.0 sq in). (F)***

RECOMMENDED PRACTICES

a. evaluate nesting needs, taking into consideration bird strain and other factors, and adjust nest size and/or number and type of nests accordingly
b. observe hens during peak nesting periods to determine if management practices (e.g. lighting programs, nest space/type) should be changed
c. provide a greater number of smaller communal nests rather than a lower number of larger communal nests (12)
d. position nest boxes in locations that are easily accessible to hens. For example, they should not be so high that injuries may occur as hens ascend or descend
e. incorporate strategies to encourage hens to use the middle nests in rows of continual nests (e.g. create more corners by using partitions or cross-overs, provide extra substrate) (14)
f. clean nests regularly to prevent the accumulation of manure
g. keep nest litter, when used, clean, dry, friable, and moisture absorbent.

[4] The inclusion of "(F)" at the end of a requirement indicates a Final Requirement that applies to flocks placed after the stated transitional date.

2.5.3 Perching

Perches provide opportunities for increased exercise and roosting off the ground at night, while also increasing vertical space (2). Perches improve bone strength, but can contribute to fractures and deformed keel bones (2). The shape, material, and cleanliness of perches can impact foot health.

Cross-wise perches and other perch arrangements that limit hen access reduce the available perch space. (2). When calculating useable perch space, purpose-designed perches can include alighting rails in aviaries, but do not include feeder trough edges or slats. Refer to the *Glossary* for the complete definition of *Perch.*

FINAL PERCHING REQUIREMENTS

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- ***Each hen must be provided with a minimum linear length of 15.0 cm (5.9 in) of useable, purpose-designed, elevated perch space[5].***
- ***Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them.***
- ***Perches must be constructed of materials that are easily cleaned and do not harbour mites.***
- ***Perches must be designed to minimize injury to hens that are mounting or dismounting as well as to any hens nearby.***
- ***Perches must not extend into nests.***
- ***Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture.***
- ***For Non-Cage Systems:***
  - ***At least 20% of the perch space must be elevated a minimum of 40.0 cm (15.7 in) from any level or tier***
  - ***The height of elevated perches must not exceed 1.0 m (39.4 in) above the closest floor or perch***
  - ***Perches must be at least 19.0 cm (7.5 inches) from walls and from the top of the perch to the ceiling, stacked vertical perches (refer to Figure 2.1), or other structures***
  - ***Adjacent perches separated by less than 19.0 cm (7.5 in) of vertical space must be at least 30.0 cm (11.8 in) apart horizontally to allow hens to perch simultaneously***

TRANSITIONAL PERCHING REQUIREMENTS[6]

Effective for flocks placed after April 1, 2017:

- ***For Cages with Furnishings installed prior to April 1, 2017:***
  - ***Each hen must be provided with a minimum linear length of 11.2 cm (4.4 in) of useable, purpose-designed, elevated perch space[5]***
  - ***Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them (F)***
  - ***Perches must be constructed of materials that are easily cleaned and do not harbour mites (F)***

[5] When calculating useable perch space, 30.0 cm (11.8 in) must be subtracted from the total linear length for each intersection of crossed perches when there is less than 19.0 cm (7.5 in) of vertical space between the intersecting perches.
[6] The inclusion of "(F)" at the end of a requirement indicates a Final Requirement that applies to flocks placed after the stated transitional date.

TRANSITIONAL PERCHING REQUIREMENTS (continued)

Effective for flocks placed after April 1, 2017 (continued):

- ***For Cages with Furnishings installed prior to April 1, 2017 (continued):***
  - ***Perches must be designed to minimize injury to hens that are mounting or dismounting as well as any hens nearby (F)***
  - ***Perches must not extend into nests (F)***
  - ***Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture. (F)***

Effective for flocks placed after January 1, 2020:

- ***For Non-Cage systems installed prior to April 1, 2017:***
  - ***Each hen must be provided with a minimum of 7.6 linear cm (3.0 in) of useable, purpose-designed, elevated perch space[7,8]***
  - ***Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them (F)***
  - ***Perches must be constructed of materials that are easily cleaned and do not harbour mites (F)***
  - ***Perches must be designed to minimize injury to hens that are mounting or dismounting as well as to any hens nearby (F)***
  - ***Perches must not extend into nests (F)***
  - ***Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture (F)***
  - ***At least 20% of the perch space must be elevated a minimum of 40.0 cm (15.7 in) from any level or tier (F)***
  - ***The height of elevated perches must not exceed 1.0 m (39.4 in) above the closest floor or perch (F)***
  - ***Perches must be at least 19.0 cm (7.5 inches) from walls and from the top of the perch to the ceiling, stacked vertical perches (refer to Figure 2.1), or other structures (F)***
  - ***Adjacent perches separated by less than 19 cm (7.5 in) of vertical space must be at least 30.0 cm (11.8 in) apart horizontally to allow hens to perch simultaneously. (F)***

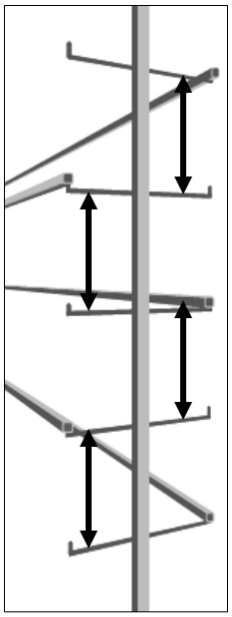

Figure 2.1: Stacked Vertical Perches. Height between each level must be at least 19.0 cm (7.5 in)

Effective for flocks placed after January 1, 2022:

- ***For Enriched Cages, each hen must be provided with a minimum linear length of 15.0 cm (5.9 in) of useable, purpose-designed, elevated perch space[7]. (F)***

RECOMMENDED PRACTICES

a. cap hollow ends of perches
b. use perches that minimize keel, foot, and nail damage. Avoid sharp edges. Use oval or mushroom shaped perches
c. use multiple perches with variable diameters

[7] When calculating useable perch space, 30.0 cm (11.8 in) must be subtracted from the total linear length for each intersection of crossed perches when there is less than 19.0 cm (7.5 in) of vertical space between the intersecting perches.
[8] Refer to Transitional Space Allowance (2.5.1) requirement, which mandates a higher space allowance effective January 1, 2020, when linear perch space per hen of less than 15.0 cm (5.9 in) is provided.

RECOMMENDED PRACTICES (continued(

d. locate perches at varying heights that allow birds to roost comfortably without coming into contact with the top of the cage
e. limit the angles between perches at different heights to 45° or less
f. limit the distance between perches at the same height to 1.0 m (39.4 in) or less
g. position perches over slats or manure belts to avoid build-up of manure.

2.5.4 Foraging and Dust Bathing

Foraging is a behavioural need that consists of pecking and scratching on a solid surface that is associated with searching for and ingesting food (2). Dust bathing is considered to be a behavioural need which is difficult to accommodate in some housing systems. Sprinkling feed intermittently on a pad as a substrate to accommodate both foraging and dust bathing may serve to meet the hens' behavioural needs. Increasing foraging opportunities by providing suitable substrate can reduce the incidence of feather pecking and cannibalism (9). Refer to *Section 5.7.1: Feather Pecking and Cannibalism* for more information.

Foraging sites in housing systems where litter is not used can include providing nutritional enrichment such as bales of hay or straw, insoluble grit, or oat hulls, or can be material that provides foraging opportunities.

Covering surfaces that hens scratch with an abrasive material can help to prevent overgrown claws. With appropriate substrate, hens are able to engage in dustbathing (9).

FINAL FORAGING AND DUST BATHING REQUIREMENTS

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- ***For Enriched Cages, each hen must be provided with a minimum of 31.0 cm² (4.8 sq in) [774.2 cm² (120 sq in) for each 25 birds] of a flooring surface for foraging.***
- ***Hens housed in litter-based systems must be provided with continuous access to litter.***
- ***For Single-Tier systems:***
  - ***At least 15% of the usable space must be litter***
  - ***Hens must be provided with at least one foraging site for each 1,500 hens (e.g. bales of hay or straw, insoluble grit or oat hulls, or other material that provides foraging opportunities). Where multiple sites are provided, they must be evenly distributed.***
- ***In Multi-Tier systems, at least 33% of the usable space must be litter, except for up to 24 weeks of age, when the litter may be reduced to a minimum of 15% of the useable space.***

TRANSITIONAL FORAGING AND DUST BATHING REQUIREMENTS[9]

Effective for flocks placed after April 1, 2017:

- ***For Cages with Furnishings installed prior to April 1, 2017, hens must be provided with a minimum of 24.8 cm² (3.8 sq in) [612.9 cm² (95 sq in) for each 25 birds] of a flooring surface for foraging.***
- ***For Single-Tier Systems installed prior to April 1, 2017, that are fully slatted, or where less than 15% of useable space is litter, a solid surface area of at least 1.5 m² (16.0 sq ft) for litter/substrate for dust bathing must be provided for each 1,000 hens. Where multiple sites are provided, they must be evenly distributed.***

[9] The inclusion of "(F)" at the end of a requirement indicates a Final Requirement that applies to flocks placed after the stated transitional date.

TRANSITIONAL FORAGING AND DUST BATHING REQUIREMENTS[10] (continued)

- ***Hens housed in litter-based systems must be provided with continuous access to litter. (F)***
- ***For Single-Tier Systems, hens must be provided with at least one foraging site for each 1,500 hens (e.g. bales of hay or straw, insoluble grit or oat hulls, or other material that provides foraging opportunities). Where multiple sites are provided, they must be evenly distributed. (F)***
- ***In Multi-Tier Systems, at least 33% of the usable space must be litter, except up to 24 weeks of age when the litter may be reduced to a minimum of 15% of the useable space. (F)***

Effective for flocks placed after January 1, 2022:

- ***For Enriched Cages, each hen must be provided with an minimum of 31.0 cm² (4.8 sq in) [774.2 cm² (120 sq in) for each 25 birds] of a flooring surface for foraging. (F)***

RECOMMENDED PRACTICES

a. hang or wall-mount additional foraging sites in multi-tier systems
b. locate the foraging area in such a way that hens can access it from as many sides as possible and allows hens to dust bathe as a group
c. utilize smooth surfaces that can be easily cleaned (e.g. mats, pads)
d. scatter feed or substrate in the foraging/dust bathing area
e. avoid locating foraging/dust bathing areas under areas where birds can perch, or take measures to prevent birds from perching on structures above the foraging/dust bathing area
f. provide a ramp between the scratch area and the slats to aid movement between the areas
g. provide foraging sites that consist of nutritional enrichment such as bales of hay or straw, insoluble grit, or oat hulls
h. inspect foraging material for quality, contaminants, and hazards prior to providing to hens
i. provide a variety of foraging materials
j. introduce ingestible foraging material gradually to the flock and provide in combination with insoluble grit.

2.6 Special Considerations for Multi-Tier Systems

A ramp between the scratch area and the slats aids movement between the areas and may help to reduce the risk of floor eggs, feather pecking, and bone fractures

REQUIREMENTS

Birds must be placed on the system near feed and water sources when moving birds to multi-tier systems.

A minimum height of 45.0 cm (17.7 in) must be provided below the bottom of any tier.

Tiers must be arranged to prevent droppings from falling directly on levels below.

The number of tiers in a vertical plane (i.e., directly above each other) must not exceed 3 where the ground level is not considered to be one tier.

Raised tiers must have a system for removal of manure that does not interfere with the birds or cause injury.

[10] The inclusion of "(F)" at the end of a requirement indicates a Final Requirement that applies to flocks placed after the stated transitional date.

RECOMMENDED PRACTICES

a. provide lighting beneath the first elevated tier when birds are provided access to this area
b. use ramps or ladders with angles that are less than 45° to facilitate movement between levels
c. remove litter from the floor level periodically to maintain the minimum height clearance of 45.0 cm (17.7 in)
d. utilize one manure belt for each elevated tier.

2.7 Access to Outdoors

Free-range systems provide access to an outdoor, uncovered area, usually with some vegetation, to which hens have access via doors or pop holes in the wall. Outdoor ranges may also have a covered verandah. Free-range systems provide birds with access to the outdoors when the weather permits. Restricting birds from using the outdoor range may be necessary when birds are at risk for exposure to disease or other threats to health and welfare.

2.7.1 Housing and Range: Design and Construction

REQUIREMENTS

Birds must have easy and continuous access to a structure that protects them from environmental conditions and meets the temperature and hygiene needs of the birds.

Door openings from the barn to the range must be a minimum of 35.0 cm (13.8 in) high and 40.0 cm (15.7 in) wide and must be distributed throughout the barn so that all birds have access.

There must be a means to restrict access to outdoors when bird health or welfare is at risk.

Perimeter fencing must be provided and maintained to protect birds from ground predators.

The openings to the range must be designed to minimize the adverse effects of weather to maintain good litter quality (Refer to* Section 3.5: Litter Management*).

RECOMMENDED PRACTICES

a. provide one or more shade structures in the outdoor area
b. provide openings along the entire length of the barn at a rate of 40.0 cm (15.7 inches) of width per 200 hens to encourage hens to use the range
c. install eaves troughs and drainage to control and direct water runoff
d. provide an overhang along with concrete, pea gravel, sand, or like material just outside the entrances/exits so as to reduce the potential for mud holes. This is particularly important in high rainfall areas
e. minimize direct sunlight penetration into the barn through openings by using awnings or overhangs above the openings.

2.7.2 Range Movement

There are additional challenges associated with raising birds in free-range systems, including pests, predators, the risk of disease transmission from other birds and animals, and the difficulty of sanitizing facilities.

REQUIREMENTS

The range area must be kept free of debris that may shelter pests.

The outdoor range must be sited and maintained to manage range conditions that can negatively affect bird health or welfare.

RECOMMENDED PRACTICES

a. check to make sure that land is free of poisonous plants, dangerous chemicals, and disease-causing organisms that could impair the health of birds
b. ensure that the majority of the range area is covered in vegetation
c. ensure stocking density of range birds on pasture does not exceed the pasture's ability to maintain vegetation
d. rotate range areas if possible to allow vegetation to re-grow between flocks. This may also help to reduce the risk of disease (15)
e. provide windbreaks where there is a likelihood of strong winds
f. utilize strategies to reduce the risk of predation (e.g. use electric fencing outside enclosures, use fine netting over enclosures, bury portion of fence to prevent ground predators from entering, attach kites to barns and/or feeders to discourage aerial predators).

2.7.3 Feeders and Waterers: Access to Outdoors

Birds housed in free-range systems with access to outdoors should have the same feeding space and diet as birds housed in non-cage indoor systems. However, appropriate measures need to be taken to protect feed from adverse weather conditions to ensure that the nutritional integrity of the feed is not compromised.

REQUIREMENTS

If feed and water are provided outdoors, it must be in such a way that discourages access by wild birds.

RECOMMENDED PRACTICES

a. protect feed from adverse climatic conditions
b. prevent access to potentially contaminated water sources
c. for birds with access to the outdoors, provide feed and water indoors.
d. rotate range areas if possible to allow vegetation to re-grow between flocks. This may also help to reduce the risk of disease (15)
e. provide windbreaks where there is a likelihood of strong winds
f. utilize strategies to reduce the risk of predation (e.g. use electric fencing outside enclosures, use fine netting over enclosures, bury portion of fence to prevent ground predators from entering, attach kites to barns and/or feeders to discourage aerial predators).

3 Barn Environmental Management

Barns need to be capable of maintaining an environment that reduces the risk of either overheating or chilling of birds and that maintains suitable air quality. The heating and ventilation systems need to be considered together. A change in temperature will change ventilation requirements.

3.1 Ventilation and Air Quality

Ventilation provides fresh air and removes stale, contaminated air. It assists in managing temperature, humidity, noxious gases (e.g. ammonia, methane, carbon dioxide, carbon monoxide), dust and other airborne particles, and affects litter quality. Birds can detect ammonia at 5 ppm and find it aversive at 20 ppm (16). Exposure to ammonia can impair health, reduce immune function, and contribute to feather pecking (16). Ammonia problems are more likely to occur in early morning and during the winter, when humidity levels may be higher.

Reliable tools to measure ammonia levels are necessary. Relying solely on smell is not sufficient since individuals' sense of smell can become accustomed to the odour (17). Carbon dioxide levels could negatively affect bird behaviour if they exceed 5,000 ppm. The build-up of noxious gases is more of a risk when combustion-type heat systems are used.

Dust is a potentially harmful air contaminant, particularly in combination with ammonia and other gases. It may directly harm the respiratory tracts of poultry and also act in the transmission of infectious agents (16).

Water vapour from the respiration of birds and moisture from heaters produce humidity (18). Well-constructed buildings with good insulation can help to achieve good air quality and temperature control. The ideal relative humidity range for poultry is between 55% and 65% (18).

Internal air circulation is also a very important factor in that it helps to distribute fresh air and supplemental heat as well as to eliminate temperature differentials (18).

Sudden or extreme variations in barn conditions can be a source of stress to birds, and may contribute to feather pecking (19).

REQUIREMENTS

Environmental control systems must be designed, constructed, and maintained in a manner that allows for fresh air and hygienic conditions that promote health and welfare for birds.

Action must be taken to manage ammonia levels if they reach a harmful range (e.g. 20 to 25 ppm).

RECOMMENDED PRACTICES

a. aim for a relative humidty level of between 50% and 70% as a primary step to maintaining good air quality
b. remove manure as needed to control both humidity and ammonia levels
c. monitor and record ammonia levels on a weekly basis. Increase monitoring frequency during cold and/or humid weather
d. take steps to control ammonia levels from exceeding 20 ppm (8) (e.g. remove manure prior to cold weather, increase ventilation, adjust feed composition, apply manure treatments, gradually adjust temperatures to acclimatize birds to lower temperatures)
e. utilize internal air circulation to help evenly distribute fresh air and supplemental heat.

3.2 Temperature

Optimal temperature ranges are not the same for all birds or stages of production. Breeder management guides are valuable resources. Comfort levels for birds can be affected by temperature, humidity, and air movement in the environment. Generally, birds can maintain their body temperature after the first few days of age through a variety of behavioural and physiological mechanisms. For that reason, from 6 weeks of age birds can tolerate wide ranges in temperature (20). For example, hens with access to the outdoors will increase their feed intake to compensate for lower ambient temperatures.

Bird behaviour can be used as a reliable indicator of thermal comfort. Signs that indicate that temperature is too high include:

- frequent spreading and flapping of wings
- panting

Conversely, signs that indicate a temperature is too low include:

- feather ruffling
- rigid posture
- trembling
- huddling or piling on top of each other
- distress vocalization

Newly hatched chicks have a poor ability to control body temperature and require supplementary heat to bring their environmental temperature up to their comfort range. When operating under conditions of minimum ventilation during chick start-up, there can be a build-up of CO_2 levels.

REQUIREMENTS

Temperatures inside housing systems must be monitored on a daily basis.

Temperatures inside housing systems must be maintained within a range that contributes to good health and welfare of the birds.

Birds must be monitored for signs of cold or heat stress. Upon discovering birds showing signs of cold or heat stress, remedial action must be taken immediately.

The environment for newly placed chicks must be pre-heated to breed-specific temperatures and maintained at a level that promotes good chick health and welfare.

RECOMMENDED PRACTICES

a. refer to Table 3.1 for general guidelines on temperature ranges for bird thermal comfort
b. protect birds against cold drafts, cold areas, and extreme heat
c. record minimum and maximum inside temperatures daily
d. measure the temperature at bird level
e. monitor for signs of cold or heat stress, particularly when ambient temperatures are extreme
f. utilize temperature alarms that relay alerts if the temperature in barns deviates from set points (high and low)
g. utilize override devices that allow operation of ventilation and/or heat systems in the barn in the event of a controller failure
h. adjust temperature ranges for hens with significant feather loss to prevent cold stress
i. provide supplemental heat in layer barns to maintain optimal air quality and temperature
j. maintain temperatures inside housing systems throughout the growth cycle in accordance with breed-specific guidelines
k. aim for a relative humidty level between 50% and 70% to assist birds with maintaining thermal comfort.

Table 3.1: Temperature Guidelines for Thermal Comfort for Birds by Age.

Bird Age	Temperature Range
17 days	30–36°C (86–97°F)
1–5 weeks	Lower by 2–3°C (4–6°F) each week to target 21°C (70°F)
6 weeks and Older	10–28°C (50–82°F). Depends on various conditions such as access to outdoors, feed intake, and feather cover.

3.3 Noise

Constant background or ambient noise, such as music, can be helpful with habituating birds to their environments. However, sudden and loud noises (e.g. yelling, slamming doors) can be startling and stressful to birds. Continual high background noise (i.e., 80 decibels) is thought to alter behaviour and can negatively impact egg production in the early laying phase (21). Conditioning pullets to common noises during rearing will assist with the birds' ability to be less reactive to sudden noise in the layer barn. Refer to *Section 1.4: Pullet Rearing and Reducing Fear.*

RECOMMENDED PRACTICES

a. minimize sound levels; avoid constant loud or sudden noise
b. ensure that ventilation fans, feeding machinery, or other equipment is constructed, placed, operated, and maintained in such a way that they are operating properly and cause the least possible noise
c. expose birds to background noise (e.g. music, voices on radio). This can be particularly helpful with preventing birds from becoming startled from sudden, unexpected, or planned (e.g. construction) noise.

3.4 Lighting

Vision is an important sense in domestic poultry (16). Birds rely on visual cues when judging what is safe to eat and drink, as well as for navigation and social behaviour (22). Controlling light and balancing light intensities in both the pullet and laying barns is an essential tool in managing bird health and welfare.

Light needs to be bright enough to allow birds to see one another and their surroundings, locate feed and water, and access perches and nests. Brighter lighting in the scratch area can help reduce the risk of eggs being laid on the floor. Conversely, lowering light intensity to levels below 5 lux can help to reduce feather pecking (2). But low light can lead to poor eye health and injuries from difficulty judging landings from perches. Sudden increases in brightness can trigger feather pecking when lights are raised for inspections (2).

Simulating the gradual oncoming of night (dusk) by gradually lowering lights at night will help hens in non-cage systems locate suitable perches for the night, or move up onto tiers while visually capable (7).

Birds are less fearful during catching and handling in lighting that is lower than their normal light environment (7).

The average light intensity can be calculated by measuring intensities in the darkest and lightest areas, as well as one or two mid-points.

REQUIREMENTS

Light intensity must be at least an average of 5 lux at feeders during the light phase where birds are kept in cages. Light intensity may only be reduced to correct injurious behaviour (e.g. feather pecking).

Light intensity must be at least an average 10 lux in the hens' environment in non-cage multi-tier systems during the light phase, so that hens can navigate their surroundings.

Where hens are housed in non-cage multi-tier systems or enriched cages under artificial light, the light intensity must be raised gradually or staged over a minimum period of 5 minutes and lowered gradually or staged over a minimum period of 15 minutes to give them sufficient time to roost and come off perches without causing injury.

RECOMMENDED PRACTICES

a. introduce and follow a regular lighting schedule that provides a minimum of 8 hours of darkness in each 24-hour period where hens are housed under artificial light
b. gradually raise or stage light intensity over a period of 5 minutes, and gradually lower or stage light intensity over a period of 15 minutes for birds in all housing systems
c. ensure that light control systems are working well and are well maintained
d. temporarily reduce light intensity in order to assist in addressing behavioural problems such as feather pecking or cannibalism
e. avoid sudden increases in light intensity, as this may cause flight reactions in some strains
f. avoid areas of direct sunlight or intense brightness inside the barn
g. coordinate the pullet and layer lighting regimes (e.g. intensity, source, start of light phase time)
h. measure and record light intensities on a regular basis using reliable equipment
i. utilize poultry-specific light sources that provide a broad spectrum of light wavelength that supports the complex visual systems of the birds.

3.5 Litter Management

Moisture is a key determinant in litter quality (16). Litter moisture can be affected by type and management of drinkers, humidity, season, ventilation, consistency and amount of fecal material, and stocking density (16). Different types of bedding have different absorption qualities (16). Although low litter moisture increases dust levels, litter wetness is considered to be a primary cause of footpad dermatitis (16) and can increase the risk of coccidiosis and necrotic enteritis.

Litter should be deep enough to insulate birds from direct contact with the floor and to mix with the manure, but not so deep that it encourages egg laying on the floor. The optimum depth depends on the choice of bedding material as well as stocking density and length of time in the barn. Low temperatures in winter lead to low ventilation rates, and the resulting higher humidity levels may lead to wet litter.

REQUIREMENTS

Litter must be of a good quality, and friable.

Bedding that is added must not be harmful or toxic to birds.

Litter condition must be monitored and managed to avoid levels of dustiness or dampness that could cause leg, respiratory, or other health problems such as the build-up of parasites or diseases.

REQUIREMENTS (CONTINUED)

Litter that has become excessively wet (e.g. from a water leak, flood) must be removed promptly.

Used litter must be removed between flocks.

RECOMMENDED PRACTICES

a. start with a minimum 1.0 cm (0.4 in) of bedding, and gradually build up to a depth of 3.0 cm (1.2 in) of litter or more. Balance depth of litter in such a way so as to minimize dust, absorb moisture to prevent caking, as well as to prevent eggs from being laid on the floor
b. evaluate litter condition throughout the barn. Pay special attention to litter around feeders and drinkers, which is often wetter than elsewhere in the barn and may need corrective action
c. ensure that, if used, wood shavings are dry and from non-treated wood
d. balance moisture levels in litter to avoid excessive dust (too dry) or caking (too wet)
e. increase the frequency of ammonia testing where litter is present.

4 Feed and Water

4.1 Feed and Water Management

Feed and water are important for welfare because they contribute to overall bird health and well-being. Working with a qualified advisor (e.g. poultry nutritionist) can assist with ensuring birds are provided with nutritionally balanced diets. Nutrient composition, quantity, and availability of feed that is contaminant- free are all important components of the feed management program, as is access to feeders. Recording feed and water consumption is an important practice since increases or decreases in consumption can be an early indicator of problems.

Aggressive behaviour may occur when birds are forced to compete for resources. In normal circumstances, all layers and pullets should have access to feed and water at all times.

REQUIREMENTS

Access to feed must be provided at all times and delivered in ways that minimize aggression, poor body condition, and injuries.

Access to water in sufficient quantities must be provided to all birds at all times in normal circumstances, up until end of lay. Interruptions for the purposes of vaccinations or water system maintenance are acceptable.

Feed that has become stale, mouldy, or contaminated must not be used, and must be replaced immediately.

Feeding and watering equipment must be monitored daily, and corrective action promptly taken when necessary.

A plan must be in place to ensure that adequate supplies of suitable feed and water are available at all times, as well as in the event of on-farm emergencies such as power interruptions, mechanical breakdowns, and/or the need to remove and replace feed.

RECOMMENDED PRACTICES

a. aim to limit interruptions to the water supply to less than 4 hours if during the light period
b. protect the feed supply from contaminants at all times
c. source feed ingredients and water additives from suppliers that test for contaminants and provide quality assurance.

4.2 Nutrition

Nutritional and metabolic disorders that may not be infectious can spread quickly through a flock if not identified and treated. For example, hypocalcemia (layer fatigue) and fatty liver syndrome (FLS) can occur when there are nutritional imbalances (23).

Insoluble grit is beneficial for the hens' digestive systems.

The contamination of feed with mycotoxins poses a serious threat to the health and productivity of poultry (24). Generally, younger animals are more susceptible to the toxic effects of all mycotoxins.

REQUIREMENTS

All birds must receive feed that meets their daily nutrient requirements to maintain good health, meet physiological demands, and avoid metabolic and nutritional disorders.

RECOMMENDED PRACTICES

a. match feed formulations and particle sizes to the different growth stages of birds and feeding and housing systems
b. provide insoluble grit at levels and particle sizes appropriate to the birds' ages
c. monitor and record daily feed consumption and investigate to determine the cause if feed consumption declines
d. monitor growth rates regularly by weighing representative samples of birds in each location and age group
e. monitor the effectiveness of the feeding regime using body weight, egg quality, and production
f. analyse feed and mineral composition of water when bird health indicates a nutrient imbalance or that feed may be contaminated (e.g. mycotoxins). Consult a qualified advisor for guidance.

4.2.1 Nutrition to Manage Bone Health

Bone metabolism in laying hens differs from that of other animals because of the high demand placed on hens for egg production (2). As a result, laying hens are susceptible to osteoporosis and fractures regardless of the type of housing system used (2). The risk of osteoporosis increases as hens age (2).

Adequate inclusion of calcium, vitamin D, and phosphorous are important during the rearing period in order to maximize bone strength (2). Increasing consumption of these nutrients after the onset of osteoporosis has little effect on bone quality in affected hens (2).

The recommended base calcium content in the pullet diet is around 1%. Both the timing and amount of calcium increases are critical for pullet bone development. Research suggests that between 2 and 3 weeks prior to the anticipated onset of lay is an appropriate timeframe to increase calcium in the ration (2). However, incorporation of high levels of calcium too early in life can result in detrimental physiological effects, especially kidney stones and gout. Optimal timing is dependent on a combination of the age, body weight, and strain. Consulting breed-specific management guides and/or a qualified advisor can offer guidance.

Feeding large particle size calcium (e.g. >2.5 mm) can be beneficial for pullets and hens, since it provides a more constant supply of calcium.

RECOMMENDED PRACTICES

a. consult breed-specific management guides and/or qualified advisors for guidance when formulating feed for pullets and hens
b. increase calcium levels in feed at least 2 weeks before anticipated onset of lay (2)
c. feed a portion of the calcium in the ration as large particle calcium (2)
d. consider calcium and available phosphorous ratios when making feed changes and/or adding supplemental calcium.

4.3 Water

Water is the birds' most important nutrient. As such, it is important that water is palatable and safe and is supplied continuously to birds of all ages. The age and body weight of birds, along with ambient temperatures, will affect water requirements.

Consumption rates can be affected by factors such as air temperature, relative humidity, and production level or phase (25). Water consumption of laying hens will increase in hot weather. Providing cooler water during warm weather by flushing lines will encourage consumption to keep birds hydrated.

The quality of water, which includes temperature, salinity, and impurities affecting taste and odour, will also affect consumption (25). For a variety of reasons, mineral and microbiological content in water can change. Protocols for testing and treating water, as well as checking equipment can be developed and followed to ensure water quality and availability.

Careful observation of birds is necessary to ensure they are drinking adequate amounts of water. A variety of watering appliances are used for poultry of different ages. These include nipples, round water dispensers, trigger cups, and open troughs. Birds need to learn how to operate watering devices. If birds are not familiar with the drinker types in the layer barn, adjustments to the drinkers may be necessary to ensure adequate water consumption.

REQUIREMENTS

Water must be palatable and not harmful to bird health.

Water must be tested at least annually for the presence of coliforms and faecal coliforms, and corrective action must be taken if necessary.

RECOMMENDED PRACTICES

a. provide watering appliances in numbers such that most birds can drink frequently, especially in warm weather
b. keep water cool in warm weather
c. when testing water, take samples from where birds drink (e.g. drinker at or close to the end of the water line)
d. use drinkers that are designed to prevent water spillage
e. record water consumption daily
f. install a water meter to assist with monitoring consumption rates
g. monitor and control water pressure when using automatic watering devices
h. flush water lines regularly
i. ensure that drinkers are functioning properly and that water pressure is appropriate immediately prior to placing day-old chicks and moving birds. Check manufacturer recommendations
j. ensure that birds are drinking after placement and that equipment is functioning properly. Adjust water pressure and drinker height as necessary
k. use the same type (e.g. nipple, cups) of drinker in both the pullet and layer barns.

5 Health Management and Husbandry Practices

5.1 Pullet Sourcing and Transition to Lay

Efforts to match the rearing environment to the adult environment can ease the transition to the layer barn and has the potential to reduce problems such as feather pecking and cannibalism (2). Providing environmental conditions (e.g. temperature, feeding and watering systems, lighting, perches, litter) during the rearing phase that are similar to those birds will encounter during the laying phase will help them adapt to the new barn. Access to perches and more complex environments (e.g. ramps, ladders, elevated terraces) during rearing is critical for birds destined for multi-tier systems, because feed and water is provided on elevated tiers. Perching is beneficial for birds destined for all non-cage systems; however, in single-tier systems, food and water are provided at ground level. Communication and coordination between pullet growers and egg farmers can help ease the transition to the layer barn.

The move from the rearing facility to the laying barn can be stressful for the birds. A stress-free or low-stress transfer and careful acclimatization of the flock to the new management system is important for bird welfare (6). Moving pullets in advance of the expected onset of lay helps to ensure that pullets become familiar with their new surroundings before they start laying (6).

It is important that the birds are quickly able to locate feed and water. Effective ways of encouraging pullets to eat include reducing the barn temperature, running the feeding lines more frequently to attract birds to feeders, and the use of feed supplements to increase feed intake (6).

REQUIREMENTS

Hens that will be housed in non-cage multi-tier systems must be sourced from non-cage rearing systems in which pullets had access to perches.

RECOMMENDED PRACTICES

a. source pullets from suppliers that utilize similar pullet rearing facilities and practices to those that the birds will experience in the layer barn:
   - avoid sourcing pullets from cage rearing systems if they will be housed in single-tier non-cage systems during lay
   - source pullets from multi-tier rearing systems if hens will be housed in multi-tier housing
   - source pullets destined for all non-cage laying systems from environments where perches were provided

b. aim to transfer pullets from the rearing to the laying facility a few days in advance of the expected start of lay
c. source pullets from suppliers that are in close proximity to the laying facility to minimize time in transit
d. coordinate the pullet and layer lighting regimes (e.g. intensity, source, start of light phase time)
e. coordinate the temperatures between end of the rearing phase and beginning of the laying phase so that birds experience consistent temperatures during transition to lay.

5.2 Health Management Plan

Pain and discomfort caused by health issues impact an animal's well-being such that good animal welfare requires good animal health. An effective Health Management Plan contributes to bird well-being by providing a strategy for disease prevention, rapid diagnosis, and effective treatment. Prevention of disease rather than treatment is better for welfare and is more economical for producers. A veterinarian can assist with recommending appropriate vaccinations and other measures to prevent infectious disease as well as internal and external parasitism.

A Health Management Plan may include:

- vaccination protocols
- protocols for dealing with internal and external parasites
- observation of all animals for injury, signs of disease, and changes in behaviour
- complete, accurate, and reliable record keeping, including treatment records
- protocols for the prevention, detection, and treatment of disease or injury, including setting targets for measuring incidences of disease and injuries
- protocols for recording daily feed and water intake
- protocols for pest control
- protocols for individual bird or group identification and treatment records
- protocols for monitoring bird weights
- training programs and protocols for handlers
- protocols for introducing new birds to the flock
- protocols for managing sick and injured birds and euthanasia
- protocols for culling birds, including at the end of production cycles
- a record of culls and mortalities
- protocols for on-farm biosecurity

Veterinarians play a key role in helping producers attain animal health objectives. Although the specific regulations vary among provinces, a valid Veterinarian/Client/Patient Relationship (VCPR)[1] must be in place in order for veterinarians to prescribe some classes of medications and vaccines.

Records are an essential aid to management.

REQUIREMENTS

A working relationship with a veterinarian must be established.

Records on disease outbreaks, health problems, abnormal conditions noted and causes if known, and remedial actions taken must be maintained.

RECOMMENDED PRACTICES

a. develop a Health Management Plan in consultation with a poultry veterinarian.

[1] A Veterinarian/Client/Patient Relationship exists when all of the following conditions have been met: (41)

- The veterinarian has assumed the responsibility for making clinical judgments regarding the health of the animal(s) and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions
- The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s) or by medically appropriate and timely visits to the premises where the animal(s) are kept
- The veterinarian is readily available for follow-up evaluation, or has arranged for emergency coverage, in the event of adverse reations or failure of the treatment regimen.

5.3 Skills Related to Flock Management

It is essential that sufficient, well-motivated, and competent personnel carry out all necessary tasks, and that personnel are well managed and supervised, fully conversant with their tasks, and competent in the use of equipment. Personnel need to have compassionate, humane, and respectful attitudes, and need to be able to anticipate and avoid many potential welfare problems and have the ability to identify those that do occur and respond to them promptly.

REQUIREMENTS

Personnel must be knowledgeable of normal bird behaviour and signs of poor health, distress, and behaviour problems, or must work in conjunction with experienced personnel.

RECOMMENDED PRACTICES

a. ensure this Code of Practice is available and accessible on-farm
b. ensure personnel receive instruction in and are knowledgeable of the basic needs of the birds entrusted to their care
c. provide training or verify that competence is demonstrated in specialized tasks (e.g. regular inspections) for all those who are required to perform such tasks
d. establish a methodical routine in completing the range of tasks (e.g. checking that systems are operating properly, behaviour) required to ensure the welfare of birds
e. develop and implement an Animal Welfare Policy and a Code of Conduct for all on-farm personnel
f. ensure that personnel receive instruction in and are knowledgeable in bird handling and moving techniques
g. ensure personnel talk and move quietly when working in the barn or with birds, particularly around birds in non-cage housing.

5.4 Disease Prevention and Management

Biosecurity is an important tool to protect against the introduction and spread of diseases. An effective biosecurity program is based on two main concepts: i) Exclusion (keeping disease out of the flock) and ii) Containment (preventing disease spread within premises or to other flocks) (26). Consultation with a poultry veterinarian or a qualified advisor can assist with developing a biosecurity program to suit specific situations and needs.

The egg sector has developed a comprehensive biosecurity standard that includes detailed sections on disease prevention that commercial producers in Canada are required to follow. For non-commercial operations, refer to *Appendix F: Resources for Further Information* for references on developing a biosecurity program.

It is important to be aware of general clinical signs of disease in birds, so that biosecurity practices may be heightened (26).

People, including on-farm personnel and visitors, may inadvertently carry infectious agents into barns. Designated clothing, hand-washing stations, changing footwear, and other strategies can reduce this risk.

REQUIREMENTS

A biosecurity protocol must be developed, followed, and reviewed annually.

All farm personnel must be aware of and understand their responsibilities in adhering to the biosecurity protocol.

Visitors must not be allowed into the barn without proper supervision or permission, and access to production units by visitors must be monitored.

Barns must be left empty for a minimum of 7 days between flocks[2].

If signs of a disease are recognized or suspected, or if birds are showing signs of altered behaviour, or mortalities are greater than expected, action must be taken without delay to establish the cause, and/or appropriate intervention must be undertaken by a suitably qualified person.

Mortalities must be recorded daily.

RECOMMENDED PRACTICES

a. manage the site with an all-in/all-out approach to facilitate effective cleaning
b. practice strict hygiene and disinfection procedures for all individuals who are in contact with the birds
c. allow only necessary personnel in poultry buildings. If it is necessary to enter more than one building, personnel should move from the youngest to the oldest birds, and from the healthiest to the least healthy birds
d. undertake alterations to housing when no birds are present
e. minimize movement of equipment and personnel between buildings, but if it is unavoidable, take precautions to maintain biosecurity
f. maintain a list of names and contact information of visitors, along with the day and time of the visit.

5.4.1 Sanitation

Facilities and equipment need to be cleaned and sanitized regularly to prevent the accumulation of organic waste and potentially infectious agents in the birds' environments.

Effective sanitation measures will help to prevent disease transfer from one flock to the next one. Sanitizers are most effective when used on clean surfaces free of organic material such as straw and manure.

If outdoor ranges are used, they also should be kept clean. It is beneficial to allow range areas to dry thoroughly prior to bird placement (27).

REQUIREMENTS

Poultry barns and feeding, watering, and ventilation equipment must be cleaned and a disinfectant applied prior to the new flock being placed.

[2] The Animal Care Assessment provides for extenuating circumstances that are beyond the control of producers.

RECOMMENDED PRACTICES

a. develop and follow a water sanitization program to maintain clean water distribution systems (e.g. lines, drinkers, medicators) while birds are in the barn
b. clean all surfaces prior to application of a disinfectant
c. allow outdoor runs to thoroughly dry prior to bird placement
d. keep outdoor runs as dry as possible when birds are present; consider alternating runs
e. remove loose dust from barns on a regular basis.

5.4.2 Pest Control

Monitoring barns is an important step in preventing and/or controlling pests (e.g. rodents, small animals, wild birds, insects, predators). Damage caused by pests takes many forms, including consumption and contamination of feed along with damage to buildings and insulation. Directly related to health, pests are carriers of many diseases, which has an impact on biosecurity (28).

It is important to be able to recognize the signs of pest infestation. Given the extreme difficulty of eliminating pests, prevention should be the primary objective. Management programs that eliminate entrances, nesting sites, along with food and water supplies (28) can help to reduce pests.

Fly control is important in poultry facilities due to possible disease spread, mortality, and food safety concerns.

Refer to *Appendix F: Resources for Further Information*.

REQUIREMENTS

Measures must be taken to control pests including rodents, small animals, wild birds, insects, and predators.

RECOMMENDED PRACTICES

a. learn to recognize signs of pest infestation
b. eliminate attractants for pests by reducing the presence of standing water, spilled feed, and vegetation around poultry barns
c. eliminate or reduce the number of places rodents and wild birds can use for shelter (e.g. clutter, garbage, or heavy vegetation around buildings)
d. store feed in pest-proof facilities; keep feed and garbage bins covered; prevent spillage
e. minimize the presence of wild birds around layer and pullet facilities as they may be carriers of infectious disease
f. keep on-farm storage facilities for items such as bedding and crates dry and inaccessible to wild birds and other pests.

5.5 Inspections

Regular inspections are essential for the early detection and correction of any flock health or management issues. In particular, signs of discomfort or distress, bird condition, alterations in behaviour, and feed and water consumption need to be observed.

REQUIREMENTS

Flocks must be inspected a minimum of twice daily. Such inspections must include: listening to and looking at the birds, checking for bird health and well-being; checking access to and availability of feed and water; operating condition of equipment; environmental conditions; and disposing mortalities.

Appropriate methods or devices must be available to allow inspection of all birds.

RECOMMENDED PRACTICES

a. provide sufficient lighting (fixed or portable) to allow birds and equipment to be clearly visible during inspections
b. remove birds that are observed to be unthrifty or have difficulty accessing feed and water, and house them separately or euthanize promptly
c. release birds that are entrapped and repair or adjust equipment as necessary
d. promptly capture and attend to escaped birds
e. talk and move quietly when inspecting birds.

5.6 Sick and Injured Birds

Maintaining daily records of egg production, water consumption, and, where possible, feed intake is a good management practice that can provide early warnings of declining health.

Segregating sick and injured birds with a likelihood of recovery, as well as those that are failing to thrive, to a less-competitive environment can assist with recovery. Euthanasia may be the best option for birds that are unlikely to recover.

Flock owners, veterinarians, and laboratories are required to immediately report the presence of an animal that is infected or suspected of being infected with a reportable disease to the appropriate federal or provincial authority.

Reportable diseases are listed in the *Reportable Disease Regulations* under the *Health of Animals Act*. Refer to *Appendix F: Resources for Further Information*. Producers need to be aware of applicable provincial reportable/notifiable disease requirements, as well.

REQUIREMENTS

Sick or injured birds must be promptly segregated for assessment and provided with appropriate care and/or treatment, or euthanized (Refer to Section 7: Euthanasia).

Any suspected cases of reportable diseases must be reported to a veterinarian immediately.

Birds that have been identified as sick or injured must be monitored at least twice daily, or at a frequency appropriate to their conditions. If not showing signs of recovery, birds must be euthanized in accordance with the on-farm euthanasia plan (Refer to* Section 7.1: On- Farm Euthanasia Plans*).

REQUIREMENTS (continued)

Medication, vaccines, and supplements must be used only in accordance with the manufacturers' instructions unless veterinary advice has been given to vary from the directions.

RECOMMENDED PRACTICES

a. check birds periodically for parasitic infections, particularly in aviary and free-range systems. Treat as necessary.

5.7 Harmful Behaviour

Harmful behaviour includes severe feather pecking, vent pecking, and cannibalism, as well as panic and hysteria, which can lead to smothering. It is important to observe flocks to establish what normal behaviour for the flock is and to utilize management strategies to prevent the outbreak of harmful behaviour.

RECOMMENDED PRACTICES

a. quietly and periodically observe flocks for durations of at least 10 to 20 minutes to assess behaviour
b. select the most appropriate bird strain and the methods of rearing to suit the type of housing and management practices in use to prevent or reduce severe behavioural problems
c. analyze and adjust feed form and composition if birds display harmful behaviour (e.g. injurious feather pecking, toe pecking, cannibalism) (2). Seek guidance from veterinarians and/or qualified advisors about feed composition as a way of preventing or minimizing feather pecking within the flock.

5.7.1 Feather Pecking and Cannibalism

Gentle feather pecking can escalate to severe levels that can lead to cannibalistic pecking (19). Outbreaks of feather pecking and/or cannibalism may occur among layers or pullets in any type of housing system, representing a significant welfare and production problem. Outbreaks can be identified by increased incidences of severe pecking, rapid rates of feather loss, and increased injury and/or mortality resulting from pecking.

Once established, these behaviours are harder to control (2).

There are multiple risk factors for these behaviours including beak form, lighting, genetics, nutrition, foraging opportunities, and flock size, as well as fearfulness during rearing (2). The greater the number of protective factors implemented, the lower the risk of feather pecking and cannibalism (2). Refer to *Section 1.4: Pullet Rearing and Reducing Fear* for more information.

REQUIREMENTS

Corrective action must be taken at the onset of an outbreak of feather pecking or cannibalism.

Injured birds must be promptly segregated for assessment and provided with appropriate care and/or treatment, or euthanized (Refer to* Section 7: Euthanasia*).

RECOMMENDED PRACTICES

a. examine and make adjustments to environmental factors (e.g. enrichments, foraging, lighting, barn temperature) should an outbreak of feather pecking or cannibalism occur or an outbreak appear imminent
b. use lighting intensities and strategies to help synchronize activities within flocks (e.g. a short dark period in the middle of the day).

5.7.1.1 On-Farm Beak Trimming

Beak trimming is an effective method for reducing cannibalism and severe feather pecking (2). Acute and chronic pain and reduced welfare can result if trimming is not carried out properly (2).

Typically, beak modification, if deemed necessary, is performed at hatcheries, where it is recommended that the procedure be done as early in the chicks' lives as possible using the infra-red treatment method. For more information, refer to the *Code of Practice for the Care and Handling of Hatching Eggs, Breeders, Chickens, and Turkeys* (www.nfacc.ca).

REQUIREMENTS

When planned on-farm, beak trimming of the new flock must be performed prior to 10 days of age.

Beak trimming must not be performed on birds that are older than 10 days of age, unless deemed necessary for emergency welfare reasons after all other measures to control cannibalism have been exhausted. In such cases, beak trimming must be carried out with veterinary consultation and oversight.

Beak trimming must be performed only by competent persons using industry approved methods that minimize bird discomfort and equipment that is properly maintained.

The producer or a competent designated representative must be readily available throughout the beak trimming process.

Do not remove more than one-third of the top beak, as measured from the tip to the entrance of the nostrils.

RECOMMENDED PRACTICES

a. monitor beak condition and provide feedback to pullet growers, hatcheries, or beak trimming crews
b. avoid routine trimming on-farm. Ensure that chicks have been beak-trimmed or treated at the hatchery and, where possible, using the infra-red method
c. adopt new beak treatment methods that enhance bird well-being as they become available
d. avoid subjecting birds that have had to be re-trimmed to stressful conditions (e.g. handling, moving, vaccination) for one to two weeks following beak trimming
e. add an electrolyte solution containing vitamin K to the water approximately two to three days before and two to three days after beak trimming to facilitate blood clotting, to alleviate stress, and to reduce dehydration
f. monitor feed and water consumption after trimming until beaks are healed. Feed levels should be raised and water pressure may have to be lowered or waterers manually triggered for several days following trimming. Follow breeder recommendations for changes in feed to minimize weight loss
g. monitor crews responsible for beak trimming for quality control.

5.7.2 Panic, Hysteria, and Smothering

Panic is an occasional but significant problem that can occur in both cage and non-cage housing systems (29). Triggers that can cause panic in poultry include noise (29), changes in lighting (30), potential predators, and human interventions (29), such as personnel carrying out unfamiliar activities (e.g. equipment and/or housing repairs). Hysteria is panic that occurs for no apparent reason.

Smothering is characterized by birds huddling together to the point where death by suffocation occurs (30). Panic smothering can occur at any time. Nest box smothering is most common when birds come into lay and is the result of birds crowding into recently used or vacated nest boxes (30). Creeping or recurring smothering typically involves fewer birds; however, it appears to be more common. Possible triggers include birds coming into lay or to peak lay, post-lay, and seasonal temperature fluctuations (30).

Paying attention to and taking note of when and where panic, smothering, and/or hysteria occur can assist producers with making changes to the barn environment to control future occurrences. For example, bright sunlight entering the barn through ventilation fans at dusk can be a trigger.

RECOMMENDED PRACTICES

a. take note of when and where incidences of panic, smothering, and/or hysteria occur to see if there are patterns that may help identify the cause
b. talk and move quietly when working in the barn or with birds, particularly around birds in non-cage housing. If it is necessary to move equipment, this should be done as quietly and smoothly as possible
c. incorporate a protocol to ensure attendants working with the same groups of birds wear clothing of similar appearance during the whole production cycle. This will help to minimize excitement of the birds
d. take measures to prevent birds from crowding or piling on top of each other in corners, particularly when working in the barn or checking birds
e. use caution when approaching birds to perform duties that are different from the normal routine
f. give the same, easily perceptible signal (such as a distinct number of knocks on the door) before entering a barn with non-cage systems to prevent the birds from being startled. This practice is particularly important when the light intensity or noise is greater outside the barn than inside
g. expose birds to background noise (e.g. music, voices on radio) and talk in a calm voice when around birds. This can be particularly helpful with preventing birds from becoming startled from sudden, unexpected, or planned (e.g. construction) noise
h. carry out routine activities consistently and according to a schedule
i. monitor nest boxes for signs of over-crowding in non-cage housing systems when flocks are coming into lay.

5.8 Controlled Moulting

Controlled moulting is not routinely practiced in laying flocks in Canada. However, in the event of an emergency (e.g. disease outbreak) or extenuating circumstances (e.g. wide-scale market disruption), controlled moulting may be undertaken on healthy birds with approval from national, provincial, or territorial industry organizations (e.g. provincial board). Controlled moulting can be accomplished primarily with lighting programs and diet formulation.

REQUIREMENTS

Controlled moulting must not be undertaken unless in emergency or extenuating situations, at which time both nutritionist and veterinarian oversight is necessary.

When necessary, controlled moulting must be induced using methods that do not involve feed withdrawal, and water must be available at all times.

5.9 Emergency Management and Preparedness

Preparedness encompasses activities, programs, and systems developed prior to a disaster or emergency, that are used to support and enhance prevention, response, and recovery efforts (31). In the context of animal welfare, advanced planning helps to protect the life, health, and welfare of poultry from the impacts of natural, man-made, or accidental emergencies (e.g. power failure, fire, flooding, inclement weather).

REQUIREMENTS

An emergency plan for reasonably foreseeable problems that may affect bird welfare must be prepared and reviewed with all personnel.

Emergency contact information must be readily available.

At least one responsible individual must be available at all times to take necessary steps in the case of an emergency.

A backup power system, where applicable, must be available to ensure that all electrically dependent mechanical systems necessary for bird health and well-being continue to operate during a power outage.

All alarms and fail safe devices, including alternate power supply, must be regularly tested.

RECOMMENDED PRACTICES

a. keep the emergency plan in a location where it can be easily be seen or found
b. review the plan annually as well as after an incident or any significant change in farm operations
c. review emergency management protocols with personnel annually
d. consider emergency management protocols when designing or renovating facilities
e. install and maintain fire extinguishers in each building housing birds. Check annually for charge and working order
f. ensure an adequate supply of feed and water is on hand in case of predicted extremes in weather (or other events) that might interrupt regular deliveries
g. develop a back-up plan to make sure that water is readily available in case of interruptions in the water supply
h. install an alarm or monitoring system to alert personnel of failures of critical systems (e.g. ventilation, feed, water, electrical power).

6 Handling and Transportation

This Code focuses on the aspects of the transport processes that take place on-farm and are thus under the control of the producer. Information regarding transportation of poultry beyond the farm gate is covered in the *Recommended Code of Practice for the Care and Handling of Farm Animals: Transportation.* Information regarding the transportation of hatching eggs and chicks is dealt with in the Hatcheries section of the *Code of Practice for the Care and Handling of Hatching Eggs, Breeders, Chickens, and Turkeys*. Refer to *Appendix F: Resources for Further Information*.

All parties involved in the catching and transporting process have a responsibility and obligation to ensure catching, transfer, and holding on-farm is undertaken in such a manner that minimizes stress and injury. It is the producer's responsibility to oversee animal care on-farm and to coordinate with catchers, transporters, and processors to help ensure animal care is maintained as birds leave the farm.

The federal requirements for animal transport are covered under the *Health of Animals Regulations, Part XII* (Transport of Animals) (32).

6.1 Pre-Transport Planning

Planning is an important component in the transportation process. This includes confirming the actual number of birds to be shipped to assist the catching crews and transporters in ensuring the appropriate number of carts or crates can be loaded with the optimum number of birds in each, taking into consideration factors such as the type of housing birds are to be loaded from, weather conditions, and scheduled delivery times. This includes ensuring that all personnel (e.g. catching, transporting) are competent in their assigned tasks. Decisions made in the planning phase have a significant impact on welfare during transit.

REQUIREMENTS

The catching and loading processes must be planned in advance to minimize bird handling and the amount of time needed to catch and load birds, and to ensure that each vehicle can leave promptly after loading.

Pre-transport planning must take into consideration the type of housing system, the number of birds that will be shipped, and the number of containers that will be needed to ensure that maximum loading densities are not exceeded.

RECOMMENDED PRACTICES

a. complete paperwork and provide to the transporter prior to loading so that the vehicle can leave immediately after loading
b. confirm the actual number of birds to be shipped among producer, catching crew, transporter, and processor before catching commences
c. replace crates with carts when replacing equipment, and where practical and possible
d. avoid loading and transporting of birds during extreme heat or cold, or other adverse weather conditions
e. ensure that carriers are experienced with transporting live birds, and that they utilize equipment that is compatible with the farm's loading system.

6.1.1 Feed and Water: Pre-Loading

Feed is typically withdrawn from birds ahead of transport to reduce the risk of contamination of carcasses during slaughter. Withdrawal times are usually determined by the processor. However, total withdrawal duration should not be so excessive so as to negatively affect bird welfare (i.e., hunger). Length of time in transport without feed and water is covered under the *Health of Animals Regulations, Part XII* (Transportation of Animals) (32).

REQUIREMENTS

Pre-transport feed withdrawal must be managed to minimize the time that birds are off feed.

Hens must be fed an appropriate layer ration until feed is withdrawn to maintain bone strength (8).

Water must be available to the birds until catching commences.

RECOMMENDED PRACTICES

a. withdraw feed from end-of-lay hens at least 3 hours and no more than 8 hours prior to planned time of catching.

6.2 Fitness for Transport

Pre-selection and removal of birds that are unfit for transport prior to the arrival of vehicles can assist with expediting the catching and loading process, which can improve welfare. A plan that clearly lays out humane and effective procedures for appropriate treatment or euthanasia for birds that are not fit for transport can assist with a consistent approach to bird welfare.

REQUIREMENTS

In preparation for transport, the flock must be evaluated for health and fitness and those birds that are deemed unfit for transport must be euthanized, separated, or transported with special provisions[1] only if for veterinary care and treatment.

Birds that are not loaded for transport must continue to be cared for in accordance with relevant sections of this Code (e.g. feed and water, temperature, ventilation, euthanasia).

Birds that are visibly sick, injured, or wet, or birds otherwise deemed unfit for transport, must not be loaded.

RECOMMENDED PRACTICES

a. refer to *Appendix C: Guidelines for Transporting Poultry* to assist with determining fitness for transport
b. communicate with the transporter and/or processor about any changes in the flock condition prior to loading.

[1] Section 139 (2) in Part XII (Transport of Animals) of the Health of Animals Regulations specifies four conditions that must be met when transporting unfit animals for veterinary care (32).

6.3 Handling and Catching

Birds are prey animals, and, as such, their natural response to predator-induced fear is to react defensively (e.g. running, wing flapping, bunching up, and/or pecking and striking out at the threat). If one bird becomes startled, surrounding birds will also react. It is important for handlers to move smoothly and quietly around birds.

Hens have weak bones by the end of lay. As a result, there is a high risk of bone fractures when hens are handled prior to transport (2). Care in handling, such as catching end-of-lay hens by both legs rather than one, reduces bone breakage (8). If layer hens are carried by one leg only, there is a greater chance of birds suffering from fractures and hip dislocations.

Methods that allow birds to remain in an upright positon while being removed from cages are utilized by some producers. In addition, the use of wheeled carts in place of crates can significantly improve welfare in that birds do not have to be transferred multiple times. With a well-trained crew, catching birds in an upright position may not take any longer than using traditional methods if wheeled carts or dollies are used.

Low intensity light helps to encourage a calm and resting condition. Night vision goggles have been used so that birds can be caught in the dark without compromising catcher safety. When handled calmly, birds can be herded. Range birds can be loaded more easily by moving them in small groups.

REQUIREMENTS

Crews must be overseen by the producer or a competent designated representative, who must be readily available throughout the catching and loading process.

Corrective action must be taken if crews or individuals are observed handling birds in ways that compromise their welfare.

All on-farm and contracted personnel involved in catching must be competent in handling birds, and must not handle birds in such a manner that causes injury or distress.

Birds must be placed in transport containers gently and in a manner that allows them to rapidly regain an upright position.

When catching birds, light intensity must be low enough to keep birds calm.

Easy access to each cage must be provided for catchers.

RECOMMENDED PRACTICES

a. use catchers that have been trained in humane catching and handling methods and that have been certified as such where available
b. limit the number of times that birds are transferred between catchers and minimize the need to manually handle birds as much as possible
c. place containers as close as possible to the birds prior to catching
d. use humane methods when restraining birds
e. release birds by setting them down on their breast or their feet
f. verify flocks and barn condition with the Catching Supervisor prior to catching
g. check for hindrances from fixtures and fittings, especially sharp edges or protrusions, prior to catching birds
h. move birds housed in *Free-Range with Access to Outdoors* systems inside prior to catching

i. catch individually and hold in a comfortable upright position with both hands as birds are transferred to the transport container. If not possible, birds should be carried by both legs, and care should be taken to minimize pressure on the legs by appropriately limiting the number of birds carried in each hand
j. corral birds with a net or screen at the loading door when loading from floor systems
k. use the lowest light level possible that will not compromise worker safety, or use blue lights, which will calm the birds while providing better visibility for catchers
l. consider catching in the dark, with catchers utilizing night vision goggles.

6.4 Loading and Unloading

Birds can be moved from barn to barn or farm to farm (e.g. pullets to laying facilities) or can be removed at the end of lay fortransport to slaughter. Regardless of who provides the euipment (e.g. producer, for-hire carrier), it is essential that the equipment used is purpose-designed, well-constructed, and properly maintained.

In Canada, poultry can be transported on flat deck trailers usingloose crate or cart systems. With loose crate systems, crates are removed from the trailer, loaded with birds, and then returned to the trailer. With carts, birds are loaded in an upright position in the barn, and the carts are wheeled directly onto the trailer for transport.

Carts are preferred because they can be brought to the birds, and birds can be loaded directly from the cage to the cart to reduce handling. Commercial producers have started to implement transportation systems that use carts for both pullets and end-of-lay hens. Birds can be kept in carts in the barn until most carts are ready to load on the vehicle, which is better for bird welfare in adverse weather. Regardless of what system is used, it is essential that containers are clean and free from protrusions or sharp parts that will injure birds.

Being in an inverted position (upside down) for any length of time is stressful for birds and causes discomfort (42). The industry acknowledges that the use of shackle carts for removing end- of-lay hens from barns is a serious welfare concern. Responsibility is shared between producers, transporters, and processors to find better ways of removing birds from barns that are destined for processing. The industry is committed to phasing out the use of shackle carts on-farm within 5 years from the date of this Code's publication by developing viable solutions that improve the welfare of hens when loading on-farm.

The average body weight and actual number of birds to be shipped is provided to the transporter. The number of birds per container will depend on the available container floor space, body weight of the birds, and prevailing environmental conditions at the time of loading. Loading densities are included in the *Recommended Code of Practice for the Care and Handling of Farm Animals: Transportation*. Refer to *Appendix F: Resources for Further Information.*

REQUIREMENTS

The design, construction, space, state of repair, and use of containers and equipment must allow the birds to be loaded, conveyed, and unloaded in ways that minimize stress and/or injury.

Containers with birds must be handled, moved, secured to vehicles, and unloaded in a manner that minimizes stress and/or injury to birds.

Measures must be taken to prevent birds from becoming too hot or too cold or wet during loading and unloading.

Steps must be taken to minimize the amount of time birds are kept in an inverted position during loading.

The number of birds in each container must be determined prior to loading, taking into consideration the available container floor space, body size/weight, prevailing environmental conditions, and duration of transport.

Birds must be loaded in containers in such a way that permits all of them to rest on the floor at the same time when evenly distributed.

Containers must be visually inspected to ensure that no parts of birds are trapped prior to loading on the vehicle.

RECOMMENDED PRACTICES

a. use carts (e.g. pullet carts, drawer carts) that can be directly loaded onto vehicles to move end-of-lay hens and pullets, as opposed to crates
b. keep loaded carts appropriately spaced in the barn to permit air flow around the entire cart in hot weather conditions. Care should be taken not to have carts on the transport vehicle for too long while loading or unloading. When carts are full, load vehicle and commence driving as soon as possible
c. acclimatize the birds to the outside weather conditions by gradually lowering the barn temperature 2 to 3 hours prior to shipping when loading in cool or cold weather
d. protect birds from getting wet during loading, especially in cold weather conditions and particularly with of end-of-lay hens that have poor feathering
e. minimize the impact of wind, rain, and adverse weather conditions when loading birds
f. set conveyor angle to prevent tilting of crates that causes birds to pile up if a conveyor is used for loading or unloading containers of live birds
g. take precautions when stacking crates with live birds; attention should be paid to temperature, ventilation, and spacing
h. avoid sliding crates when stacking to prevent toes from being caught
i. check the load and surrounding area for loose birds before allowing the vehicle to leave
j. consider weather conditions when determining load densities
k. the recommended maximum density is 63 kg/m^2 (12.9 lb/sq ft [4]) This should be reduced by 15 to 25 percent in summer months
l. refer to Table 6.1 for a guideline on recommended maximum loading densities.

Table 6.1: Guidelines for Maximum Loading Densities.

Loading Conditions	Density (kg/m²)	Density (kg/sq ft)
Normal	63.0	5.9
15% Reduction (Summer Months)	53.6	5.0
25% Reduction (Summer Months)	47.3	4.4
To calculate the number of birds per container, the following formula can be used: $\frac{\text{Density (kg/m}^2\text{) x [container interior surface area (m}^2\text{)]}}{\text{Average weight of birds (kg)}}$		

6.5 Facilities Design and Maintenance

Owners and operators of poultry operations have a responsibility to provide facilities and equipment that make bird handling, loading, and unloading possible without causing injury or suffering. Well-designed buildings can help to improve the humane handling of birds and discourage transfer of birds between handlers. Unobstructed laneways and yards can ensure that transport vehicles, including tractor-trailer units, can safely move birds to and from the farm and between barns. Unobstructed access for transport vehicles to the barn is important as well.

REQUIREMENTS

When building new barns or renovating existing barns or yards, the way in which birds are moved into and out of barns and/or cages must be taken into consideration with a view to facilitating safe and humane transfer of birds to and from the transport vehicles (e.g. tractor-trailer).

Driveways and yards must be maintained to facilitate unobstructed, safe, and easy access by transport vehicles.

RECOMMENDED PRACTICES

a. consult with stakeholders (e.g. processors, catchers, transporters) when building new barns or renovating existing barns or yards to ensure that the facilities can safely accommodate vehicles and equipment
b. ensure that building design discourages transfer of birds between handlers
c. adapt building design to the catching and loading equipment used and have sufficient number and size of doors or openings
d. assess and adopt new practices and technologies that can help improve bird welfare during all stages of catching and loading
e. maintain level and safe driveways and yards by regular grading, snow removal, and salting and/or sanding
f. ensure that loading/unloading areas and equipment permit efficient and humane bird handling
g. design facilities to minimize the risk of birds getting wet during the loading process (e.g. install continuous eaves troughs over doorways)
h. protect doorways from falling ice and snow.

7 Euthanasia

Euthanasia is the term used to describe ending the life of animals using methods that minimize or eliminate pain and distress by causing rapid loss of consciousness followed by cardiac or respiratory arrest and death (34).

7.1 On-Farm Euthanasia Plans

Comprehensive on-farm euthanasia plans provide consistent guidance about when euthanasia should be applied, by whom, and the methods that should be used. It is important that responsible personnel be made aware of and trained in following the plan.

REQUIREMENTS

An on-farm written euthanasia plan, that at a minimum includes the following elements, must be developed and followed:

- ***methods of euthanasia***
- ***which birds have to be euthanized (refer to* Section 7.3: Decision Making around Euthanasia*)***
- ***a protocol to ensure that euthanasia is carried out in a timely manner***
- ***who is authorized to perform euthanasia.***

The on-farm euthanasia plan must be reviewed annually and revised as necessary.

On-farm personnel who are responsible for identifying birds to be euthanized or for performing euthanasia must be aware of the plan and kept apprised of all amendments.

RECOMMENDED PRACTICES

a. consult a poultry veterinarian or a qualified advisor for assistance in developing the on-farm written euthanasia plan
b. develop clear guidelines that include conditions under which birds must be euthanized to ensure consistent application of euthanasia protocols
c. keep records that distinguish between culls and found mortality to help assess the effectiveness of the on-farm euthanasia plan.

7.2 Skills and Knowledge

Personnel involved in euthanasia need to understand how to apply the method being used and the expected outcome, and be able to assess whether equipment being utilized (if any) is in good working order. They must be able to recognize when the bird is insensible and be able to apply a secondary euthanasia method if the first method was ineffective. It is important that those responsible for culling birds are knowledgeable and competent in making decisions around euthanasia (refer to *Section 7.3: Decision Making around Euthanasia*).

REQUIREMENTS

Personnel must be competent in identifying birds that need to be euthanized.

Individuals who euthanize birds must be competent in the appropriate euthanasia methods, as well as in determining insensibility.

Personnel must be supervised until proven to be competent in their ability to euthanize birds.

RECOMMENDED PRACTICES

a. utilize formal training programs that assess for competency and that specialize in euthanasia of birds
b. evaluate on-farm personnel annually to review competence in all aspects of euthanasia
c. confirm that service providers who euthanize birds are competent in the appropriate methods of euthanasia.

7.3 Decision Making around Euthanasia

Poor health, disease, injury, and loss of productivity are just a few reasons that may lead to the decision to euthanize a bird (35). Frequent routine inspections of flocks are important to identify birds that may require segregation, medical attention, or euthanasia. Euthanasia may be necessary when a sick or injured bird is not responding to treatment, has a poor prognosis, is unable to access feed or water, or has lost body condition. Additionally, health and welfare risks to the rest of the flock need to be considered (e.g. disease transmission, injurious feather pecking). There are two possible management options:

- treat and/or segregate – if appropriate and/or proven medical treatment is available
- euthanize – euthanasia may be the best option for welfare reasons

When a farm has a written policy that clearly states the conditions under which an animal should be euthanized, on-farm personnel are able to more easily perform euthanasia (35). It is important that when the decision to euthanize is made, the bird be euthanized in a timely manner (35).

Refer to *Appendix D: Example Euthanasia Decision Guidance* for further information.

REQUIREMENTS

Personnel must be competent in identifying birds that need to be euthanized.

Sick or injured birds that are suffering and unlikely to recover must be euthanized without delay.

RECOMMENDED PRACTICES

a. ensure that on-farm personnel understand and follow protocols on when birds must be euthanized, as outlined in the on-farm euthanasia plan.

7.4 Methods of Euthanasia

Very little research has been done on the humaneness of various methods of euthanasia (16). On-farm euthanasia options for individual birds include gas inhalation, cervical dislocation, blunt force trauma, captive bolt, and decapitation.

Death may not occur immediately but is the result of eventual respiratory and cardiac failure, which can take several minutes (35). It is therefore essential that birds be swiftly rendered and remain insensible until death. For this reason, euthanasia methods that affect the brain first are preferred (36).

Immediate application of the same or an alternate approved euthanasia method is required when signs of sensibility are observed. Signs of sensibility include:

- bird blinks when the surface of the eye is touched (corneal reflex)
- rhythmic breathing (check for abdominal movement in the vent area)

Absence of these signs indicates that the bird is insensible. Death is confirmed by cessation of breathing and heartbeat.

Each farm should select euthanasia methods based on criteria such as humaneness of the method, skill level and abilities of the individuals performing euthanasia, safety for personnel, emotional impact on those applying or observing euthanasia, environmental impacts, carcass disposal methods and use, and practicality.

REQUIREMENTS

***An acceptable method for euthanizing birds must be used. Refer to* Appendix E: Acceptable Methods of Euthanasia.**

The method used to euthanize birds must be administered by a competent individual in a manner that minimizes pain or distress.

Prior to being euthanized, birds must be handled in a manner that minimizes pain or suffering.

All equipment used for euthanasia must be well maintained, used correctly, and not overloaded, so that it operates effectively and efficiently.

The effectiveness of the application used must be evaluated, and action taken (e.g. repair, replace, alternative method employed) when failure occurs.

An alternate back-up euthanasia method must be readily available whenever birds are euthanized, in case the primary method fails.

Birds must be inspected to confirm insensibility immediately after the euthanasia method has been applied.

If signs of sensibility are observed, a second application of an acceptable method must be immediately administered.

Death must be confirmed before leaving birds and disposing carcasses.

RECOMMENDED PRACTICES

a. start training for physical methods, and in particular cervical dislocation, using carcasses prior to training using live birds
b. minimize pre-euthanasia handling as much as possible
c. monitor the effectiveness of euthanasia methods and/or equipment and assess periodically for increases in failure rates.

8 On-Farm Depopulation

In some cases, poultry are required to be humanely destroyed on-farm in an emergency such as a disease outbreak, natural disaster, or other unexpected event. In addition, on-farm depopulation of end-of-lay hens is an alternative to shipping hens to slaughter plants, as this will eliminate the transportation stress on these birds (16).

A written protocol detailing Standard Operating Procedures provides guidance for situations where humane destruction of flocks on-farm is warranted. Protocols will need to be reviewed and updated on a regular basis as new and better methods are developed and approved.

The written humane on-farm depopulation protocol should include (adapted from 37):

- method(s) of destruction (planned and emergency)
- continuous monitoring procedures
- biosecurity considerations
- identification of appropriately trained individuals to take control of the process
- reporting procedures to designated authorities
- personnel considerations, including emotional and physical stress (38)

REQUIREMENTS

Death must be confirmed before disposal.

RECOMMENDED PRACTICES

a. conduct a planning discussion with personnel to coordinate activities, review safety practices and expectations, etc. prior to on-farm depopulation event
b. designate one competent individual who is knowledgeable about the procedure(s) being used and the associated risks to be in charge of the event
c. coordinate observation by qualified and competent individuals, if on-farm depopulation is a first or infrequent event, to review and provide feedback on the impact of welfare outcomes
d. develop a plan in advance of each on-farm depopulation event for the appropriate disposal of birds
e. develop a plan for on-farm depopulation events that are carried out due to disease outbreak that includes a decontamination protocol. Seek qualified guidance as necessary.

8.1 Planned On-Farm Depopulation

Methods used for on-farm depopulation planned at end of lay should meet a higher welfare standard than methods used in emergency situations. Resources for methods for destroying large numbers of birds or entire flocks can be obtained from appropriate authorities.

REQUIREMENTS

In consultation with a veterinarian or other qualified advisor, a written protocol for planned on-farm depopulation must be developed for operations that depopulate on-farm.

***An acceptable method for euthanizing birds must be used. Refer to* Appendix E: Acceptable Methods of Euthanasia.**

8.2 Emergency On-Farm Depopulation

Destroying an entire flock may employ euthanasia techniques, but not all methods used for on-farm depopulation meet the criteria for euthanasia (34). Despite this, the methods employed for destroying large numbers of birds in emergency situations need to be as humane as possible given the circumstances. Refer to *Section 5.9: Emergency Management and Preparedness.*

REQUIREMENTS

An on-farm depopulation plan for emergency situations must be developed.

Methods for destroying entire flocks on-farm must be as humane as possible given the circumstances and the need to balance the risk for further negative impacts on bird welfare.

References

1. American Veterinary Medical Association (AVMA) Animal Welfare Division (2010) Literature Review on the Welfare Implications of Induced Molting of Layer Chickens. Available at: www.avma. org/KB/Resources/LiteratureReviews/Documents/induced_molting_layer_chickens_bgnd.pdf Accessed: July 14, 2015.
2. Widowski T.M., Classen H., Newberry R.C., Petrik M. & Schwean-Lardner K. (2013) *Code of Practice for the Care and Handling of Pullets, Layers, and Spent Fowl: Poultry (Layers): Review of Scientific Research on Priority Issues.* Lacombe, AB: National Farm Animal Care Council.
3. Janczak A.M. & Riber A.B. (2015) Review of Rearing-Related Factors affecting the Welfare of Laying Hens. *Poultry Science* 94(7):1454–1469.
4. Li T., Howland H.C. & Troilo D. (2000) Diurnal illumination patterns affect the development of the chick. *Vision Research* 40(18):2387–2393.
5. Malleau A.E., Duncan I.J.H., Widowski T.M. & Atkinson J.L. (2007) The importance of rest in young domestic fowl. *Applied Animal Behaviour Science* 106(1):52–69.
6. Thiele H. (2007) Management Recommendations for Rearing Pullets for Alternative Housing Systems. Ed. Flock D. *Lohmann Information* 42(2):14–24.
7. Kristensen H.H. T*he effects of light intensity, gradual changes between light and dark and definition of darkness for the behaviour and welfare of broiler chickens, laying hens, pullets and turkeys*. Copenhagen, DK: Department of Large Animal Sciences, University of Copenhagen.
8. Hester P.Y. (2005) Impact of Science and Management on the Welfare of Egg Laying Strains of Hens (Review). *Poultry Science* 84(5):687–696.
9. Mench J., Newberry R., Millman S., Tucker C. & Katz L. (2010) Chapter 4: Environmental Enrichment. In: *Guide for the Care and Use of Agricultural Animals in Research and Teaching.* 3rd ed. Champaign, IL: Federation of Animal Science Societies. pp. 33–35.
10. Department for Environment, Food and Rural Affairs. (2007) *Code of Practice for the Prevention and Control of Salmonella in Commercial Egg Laying Flocks.* Available at: webarchive.nationalarchives.gov.uk/20130822084033/http://www.defra.gov.uk/animalh/diseases/zoonoses/zoonoses_reports/ sallay.pdf Accessed: May 30, 2016.
11. American Veterinary Medical Association (AVMA) Animal Welfare Division (2012). *Literature Review on the Welfare Implications of Laying Hen Housing.* Schaumburg, IL: American Veterinary Medial Association.
12. Ringgenberg N., Frohlich E.K.F., Harlander-Matauschek A., Wurbel H. & Roth B.A. (2014) Does nest size matter to laying hens? *Applied Animal Behaviour Science* 155:66–73.
13. Hunniford M.E. & Widowski T.M. (2017) Nesting alternatives: Adding a wire partition to the scratch area affects nest use and nesting behaviour of laying hens in furnished cages. *Applied Animal Behaviour Science* 186:29–34.
14. Clausen T. & Riber A.B. (2012) Effect of heterogeneity of nest boxes on occurrence of gregarious nesting in laying hens. *Applied Animal Behaviour Science* 142(3-4):168–175.
15. Hester P., Anderson K., Estevez I., Koelkebeck K., Noll S., Porter R., Turk C.M. & Webster B. (2010) Chapter 9: Poultry. In: *Guide for the Care and Use of Agricultural Animals in Research and Teaching.* 3rd ed. Champaign: Federation of Animal Science Societies. pp. 102–128.
16. Schwean-Lardner K., Anderson D., Petrik M., Torrey S. & Widowski T.M. (2013) *Code of Practice for the Care and Handling of Chickens, Turkeys and Breeders: Review of Scientific Research on Priority Issues: Chickens, Turkeys, and Breeders.* Lacombe, AB: National Farm Animal Care Council.
17. PHE Centre for Radiation, Chemical and Environmental Hazards (2015) Ammonia-Toxicological Overview. London: Public Health England.
18. Huffman H. (2007) Poultry Barn Ventilation. Ontario Ministry of Agriculture, Food and Rural Affairs, Eastern Ontario Poultry Conference.

19. University of Bristol (2013) I*mproving Feather Cover: A guide to reducing the risk of injurious pecking occurring in non-cage laying hens*. Bristol, UK: University of Bristol.
20. Widowski T.M. (2010) The Physical Environment and Its Effect. In: T*he Welfare of Domestic Fowl and Other Captive Birds*. Eds. Duncan I.J.H. & Hawkins P. *Springer Dordrecht Heidelberg* 6:137–164.
21. O'Connor E.A., Parker M.O., Davey E.L., Grist H., Owne R.C., Szladoviits B., Demmers T.G., Wathes C.M. & Abeyesinghe S.M. (2011) Effect of low light and high noise on behavioural activ,ity physiological indicators of stress and production in laying hens. *British Poultry Science* 52(6):666–74.
22. Collins S., Forkman B., Kristensen H.H., Sandoe P. & Hocking P.M. (2011) Investigating the importance of vision in poultry: Comparing the behaviour of blind and sighted chickens. *Applied Animal Behaviour Science* 133(1-2):60–69.
23. Dunkly C. (2009) Important Nutritional Diseases that Affect Laying Hens. College of Agricultural & Environmental Sciences, University of Georgia. Available at: www.thepoultrysite.com/articles/1600/important-nutritional-diseases-that-affect-laying-hens/
24. BIOMIN GmbH (2014) Poultry: Symptoms/Residues. Mycotoxins. Available at: www.mycotoxins.info/myco_info/animpy_sr.html. Accessed: September 19, 2014.
25. Ward D. & McKague K. (2007) Water Requirements of Livestock. Ontario Ministry ofAgriculture and Food. Available at: www.omafra.gov.on.ca/english/engineer/facts/07-023.htm#6. AGDEX 716/400. Accessed: June 9, 2014.
26. Ontario Ministry of Agriculture, Food and Rural Affairs. *Biosecurity Recommendations for Commercial Poultry Flocks in Ontario*.
27. Beutler A. (2007) Poultry Health and Disease Fact Sheet. Saskatchewan Ministry of Agriculture. Available at: www.agriculture.gov.sk.ca/Poultry_Health_Disease. Accessed: November 17, 2014.
28. Lang B., Dam A. & Taylor K. (2013) *Rodent Control in Livestock and Poultry Facilities*. Toronto, ON: Ministry of Agriculture and Food and Ministry of Rural Affairs.
29. Richards G.J., Brown S.N., Booth F., Toscano M.J. & Wilkins L.J. (2012) Short Communications: Panic in free-range laying hens. *Veterinary Record* 170(20):519.
30. Bright A. & Johnson E.A. (2011) Short Communication: Smothering in commercial free-range laying hens: A preliminary investigation. *Veterinary Record* 168(19):512.
31. Alberta Farm Animal Care (2013) *Alberta Poultry Industry Emergency Response Planning and Resource Guide for Producers.* Calgary, AB: Alberta Farm Animal Care.
32. Canadian Food Inspection Agency (2020) Health of Animals Regulations: Part XII (Transport of Animals). Available at: https://laws-lois.justice.gc.ca/eng/regulations/C.R.C.,_c._296/index.html. Accessed: March 30th, 2020.
33. Canadian Agri-Food Research Council (2001) *Recommended code of practice for the care and handling of farm animals: Transportation.* Ottawa, ON: Canadian Agri-Food Research Council.
34. American Veterinary Medical Association (AVMA) (2013) *AVMA Guidelines for the Euthanasia of Animals: 2013 Edition.* Schaumburg, IL: American Veterinary Medical Association.
35. Woods J., Shearer J.K. & Hill J. (2010) Recommended On-farm Euthanasia Practices. In: *Improving Animal Welfare - A Practical Approach.* Ed. Temple Grandin. Cambridge, UK: CAB International. pp. 186–213.
36. Canadian Veterinary Medical Association (CVMA) (2014) Euthanasia - Position Statement. Available at: www.canadianveterinarians.net/documents/euthanasia. Accessed: April 8, 2015.
37. World Organisation for Animal Health (OIE) (2014) Terrestrial Animal Health Code: Chapter 7.6-Killing of Animals for Disease Control Purposes. Available at: www.oie.int/index.php?id=169&L=0&htm ile=chapitre_aw_killing.htm. Accessed: September 12, 2014.
38. Whiting T.L. & Marion C.R. (2011) Perpetration-induced traumatic stress - A risk for veterinarians involved in the destruction of healthy animals. *The Canadian Veterinary Journal* 52(7):794–796.

39. National Turkey Federation (2013) *Animal Care Best Management Practices: Euthanasia Guidelines*. Washington, DC: National Turkey Federation.
40. National Turkey Federation (2012) *Animal Care Best Management Practices: Production Guidelines.* Washington, DC: National Turkey Federation.
41. Canadian Veterinary Medical Association (CVMA) (2016) The Importance of the Veterinarian-Client-Patient-Relationship. Available at: www.canadianveterinarians.net/documents/importance-of-vcpr. Accessed: June 14, 2016.
42. Bedanova I., Voslarova E., Chloupek P., Pistekova V., Suchy P., Blahova J., Dobsikova R. & Vecerek V. (2007) Stress in Broilers Resulting from Shackling. *Poultry Science* 86(6):1065–1069.
43. Widowski T.M., Harlander A. & Petrik M. (2025) *Code of Practice for the Care and Handling of Pullets and Laying Hens: Review of Scientific Research on Amendment Topics*. Lacombe, AB: National Farm Animal Care Council. Literature Review.

Transitional and Final Housing Requirements for Enriched Cages

Code Section	Transitional[1] and Final Requirements: Effective for flocks placed after April 1, 2017	Final Requirements: Effective for flocks placed after January 1, 2022[2]
2.5.1: Space Allowance	• For Enriched Cages, a minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level (F)	
	• For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with a minimum space allowance of 580.6 cm^2 (90.0 sq in)	• For Enriched Cages, each hen must be provided with a minimum of 750.0 cm^2 (116.25 sq in) of total space, including nests, of which 600.0 cm^2 (93.0 sq in) does not include nest boxes
2.5.2: Nesting	• The nest space must be enclosed on at least three sides to provide privacy and shading (F) • Where nest curtains are used, they must extend close to the floor (without impeding the flow of eggs) (F) • The nest area must not contain drinkers, feeders, or perches (F) • The space between the nest area and the useable feed trough must be at least 15.25 cm (6.0 in) (F) • The floor of the nest area must be covered with a surface that promotes nesting and prevents injury (F)	
	• For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with nest space area at a minimum of 40.6 cm^2 (6.3 sq in)	• For Enriched Cages, each hen must be provided with nest space area at a minimum of 65.0 cm^2 (10.0 sq in)
2.5.3: Perching	• Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them (F) • Perches must be constructed of materials that are easily cleaned and do not harbour mites (F) • Perches must be designed to minimize injury to hens that are mounting or dismounting as well as any hens nearby (F) • Perches must not extend into nests (F) • Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture (F)	
	• For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with a minimum linear length of 11.2 cm (4.4 in) of useable, purpose designed elevated perch space[3]	• For Enriched Cages, each hen must be provided with a minimum linear length of 15.0 cm (5.9 in) of useable, purpose-designed, elevated perch space[3]
2.5.4: Foraging and Dust Bathing	• For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with a minimum of 24.8 cm^2 (3.8 sq in) [612.9 cm^2 (95 sq in) for each 25 birds] of a flooring surface for foraging	• For Enriched Cages, each hen must be provided with a minimum of 31.0 cm^2 (4.8 sq in) [774.2 cm^2 (120 sq in) for each 25 birds] of a flooring surface for foraging

[1] Transitional Requirements that are in shaded boxes and identified by "(F)" at the end of the requirement indicate a Final Requirement. Inclusion as Transitional Requirements mandates modifications to existing housing systems prior to the final transition date.

[2] Final Requirements take effect on April 1, 2017, for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017, or on January 1, 2022, for Cages with Furnishings that were installed prior to April 1, 2017.

[3] When calculating useable perch space, 30.0 cm (11.8 in) must be subtracted from the total linear length for each intersection of crossed perches when there is less than 19.0 cm (7.5 in) of vertical space between the intersecting perches.

Transitional and Final Housing Requirements for Non-Cage Housing

Effective Date	Transitional[1] Requirements for flocks placed after Effective Date	Final Requirements[2]
2.5.1: Space Allowance		
Apr. 1, 2017	• For Non-Cage housing, a minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level (F)	
Jan. 1, 2020	• For Non-Cage systems installed prior to April 1, 2017, that have at least 50% of the useable space as slats or wires, each hen must be provided with the following minimum useable space allowance (which does not include nest space): - 929.0 cm^2 (144.0 sq in/1.0 sq ft) if a minimum of 15.0 cm (5.9 in) of perch space per hen is provided, **OR** - 1,115.0 cm^2 (172.8 sq in/1.2 sq ft) if perch space of at least 7.6 cm (3.0 in), but less than 15.0 cm (5.9 in) per hen is provided	• For Non-Cage systems, each hen must be provided with the following minimum useable space allowance (which does not include nest space)[3]: - **Single-Tier - All litter barns**: 1,900.0 cm^2 (294.5 in^2/2.05 sq ft) - **Single-Tier - Combination of wire, slats, litter:** 929.0 cm^2 (144.0 in^2/1.0 sq ft) - **Multi-Tier - Combination of wire, slats, litter:** 929.0 cm^2 (144.0 sq in/1.0 sq ft)
2.5.2: Nesting		
Apr. 1, 2017	• The nest space must be enclosed on at least three sides to provide privacy and shading (F) • Where nest curtains are used, they must extend close to the floor (without impeding the flow of eggs) (F) • The nest area must not contain drinkers, feeders, or perches (F) • The space between the nest area and the useable feed trough must be at least 15.2 cm (6.0 in) (F) • The floor of the nest area must be covered with a surface that promotes nesting and prevents injury (F)	
Jan. 1, 2020	• For Non-Cage systems installed prior to April 1, 2017: (F) - each hen must be provided with a minimum nest space area of 83.2 cm^2 (12.9 sq in)[1.0 m^2 (10.8 sq ft) for each 120 hens] - nest space must not be included when calculating useable space allowance	

[1] Transitional Requirements that are in shaded boxes and identified by "(F)" at the end of the requirement indicate a Final Requirement. Inclusion as Transitional Requirements mandates modifications to existing housing systems prior to the final transition date.
[2] Unless otherwise specified, all Final Requirements take effect for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017.
[3] A minimum of 15.0 cm (5.9 in) of perch space per bird must be provided. Refer to Perching (2.5.3).

Transitional and Final Housing Requirements for Non-Cage Housing (continued)

Effective Date	Transitional[1] Requirements for flocks placed after Effective Date	Final Requirements[2]
2.5.3: Perching		
Jan. 1, 2020	• For Non-Cage systems installed prior to April 1, 2017, each hen must be provided with a minimum of 7.6 linear cm (3.0 in) of useable, purpose-designed, elevated perch space[4,5]	• For Non-Cage systems, each hen must be provided with a minimum linear length of 15.0 cm (5.9 in) of useable, purpose designed, elevated perch space[5]
	• Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them (F) • Perches must be constructed of materials that are easily cleaned and do not harbour mites (F) • Perches must be designed to minimize injury to hens that are mounting or dismounting as well as any hens nearby (F) • Perches must not extend into nests (F) • Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture (F) • At least 20% of the perch space must be elevated a minimum of 40.0 cm (15.7 in) from any level or tier (F) • The height of elevated perches must not exceed 1.0 m (39.4 in) above the closest floor or perch (F) • Perches must be at least 19.0 cm (7.5 inches) from walls and from the top of the perch to the ceiling, stacked vertical perches, or other structures (F) • Adjacent perches separated by less than 19.0 cm (7.5 in) of vertical space must be at least 30.0 cm (11.8 in) apart horizontally to allow hens to perch simultaneously (F)	
2.5.4: Foraging and Dust Bathing		
Apr. 1, 2017	• Hens housed in litter-based systems, must be provided with continuous access to litter (F) • For Single-Tier systems, hens must be provided with at least one foraging site for each 1,500 hens (e.g., bales of hay or straw, insoluble grit or oat hulls, or other material that provides foraging opportunities). Where multiple sites are provided, they must be evenly distributed (F) • In Multi-Tier systems, at least 33% of the usable space must be litter, except for up to 24 weeks of age, when the litter may be reduced to a minimum of 15% of the useable space (F)	
	- For Single-Tier systems installed prior to April 1, 2017 that are fully slatted, or where less than 15% of useable space is litter, a solid surface area of at least 1.5 m^2 (16.0 sq ft) for litter/substrate for dust bathing must be provided for each 1,000 hens. Where multiple sites are provided, they must be evenly distributed	- For Single-Tier systems at least 15% of the usable space must be litter

[4] Refer to Transitional Space Allowance (2.5.1) requirement, which mandates a higher space allowance effective January 1, 2020, when perch space of less than 15.0 linear cm (5.9 in)/bird is provided.

[5] When calculating useable perch space, 30.0 cm (11.8 in) must be subtracted from the total linear length for each intersection of crossed perches when there is less than 19.0 cm (7.5 in) of vertical space between the intersecting perches.

Guidelines for Transporting Poultry

SHOULD THIS BIRD BE LOADED?
Guidelines for Transporting Poultry

LOAD & TRANSPORT HEALTHY BIRDS

DO NOT LOAD DO NOT TRANSPORT

- Weak and/or not alert
- Dark red, purple, or black combs or wattles
- Discharge from eyes/nostrils
- Swollen head/neck
- Skin on head or neck is dark red or very pale **(Exception: toms can have bright blue skin in this area)**
- Bloody and/or prolapsed vents
- Emaciated and weak: very thin, easily felt breastbone **(Exception: End-of-lay hens may have pronounced breastbones but if emaciated they must not be loaded)**
- Dislocated, broken or exposed bones **(including injury due to handling)**
- Unable to rise or walk due to physical abnormality or injury

Birds not loaded should be segregated according to on-farm protocol.

Notify farm manager of birds left on the farm before leaving.

CAUTION
Conditions requiring assessment before loading

Environmental

- Wet birds in cool or cold weather
- Heat and/or humidity
- Cold and/or wind chill
- Road closures

Individual Bird

- Minor trauma, wounds or bleeding **(including injury due to handling)**

Flock

- Diarrhea
- Coughing and sneezing - "snicking"
- If a flock is diagnosed with a disease by a veterinarian or laboratory, special provisions for loading may be required.

Assessment and joint decisions should be made by the producer, catching crew, hauler and processing plant when faced with CAUTION conditions

Regulations
"No person shall load, confine or transport an animal that is unfit, or cause one to be loaded, confined or transported, in a conveyance or container." Health of Animals Regulations, Part XII, 139 (1).

DO NOT

- Transport a sick or injured bird
- Load or unload a bird in a way likely to cause injury or suffering
- Crowd birds to such an extent as to cause injury or suffering

www.inspection.gc.ca

Violators of the *Health of Animals Act*:

- ⇒ Fines up to $10,000
- ⇒ Increased fines for repeat offenders
- ⇒ Repeat offenders posted on CFIA website

See the "Should This Bird Be Loaded" Handbook for more Information.

Updated 2012

Guidelines for Dealing with Poultry

Identification of Sick or Injured Birds


Weak, not alert


Emaciated


Unable to walk


Unable to rise/walk due to physical abnormality
(Do not confuse with fatigue)


Swollen head


Discoloured comb


Broken leg

LOAD & TRANSPORT HEALTHY BIRDS
1. Identify
2. Cull
3. Dispose

CFIA Livestock Emergency Transport Line
1-877-814-2342

Environmental Considerations

Maximum Loading & Transport Guidelines	Moderate Density	Extreme Heat Density
Broiler Chickens	63 kg/m²	54 kg/m²
Broiler Breeders	66 kg/m²	56 kg/m²
Turkeys	98 kg/m²	83 kg/m²
End-of-Lay Hens	63 kg/m²	54 kg/m²

Reference: The Recommended Code of Practice for the Care and Handling of Farm Animals - Poultry

Factors to Consider

- Duration of transport (including loading and lairage)
- Weather at load out, along travel route and at processing plant
- Time of day of load out
- Number of birds in the barn
- Ventilation in barn
- Condition of barn (eg. litter)

Recommended Code of Practice for the Care & Handling of Farm Animals

Air temperature **in load** should be maintained at 5°C to 30°C for all birds, except end-of-lay hens, which should be maintained at 13°C to 30°C

Recent research (Mitchell and Kettlewell, 2008) recommends for broilers, an upper **in load** temperature limit of 24°C.

Reprinted with permission from the Poultry Industry Council (*www.poultryindustrycouncil.ca*).

Example Euthanasia Decision Guidance

Answering the following questions can assist in making appropriate euthanasia decisions for poultry (adapted from 39,40):

- does the bird appear to be experiencing pain or distress (see below)?
- what is the degree of that pain and distress, and can it be treated?
- what is the cause of the pain or distress? Can the cause be addressed?
- does the bird show interest in feed and water?
- can the bird access feed and water?
- is the bird responding positively to treatment, or is its condition getting worse?
- is recovery likely within an acceptable time frame?
- is the bird likely to transmit disease to other birds?

Individual operations may establish additional criteria for euthanasia.

The following list provides examples of potential signs of pain or distress in individual birds that warrant further evaluation:

- weak, not alert
- hunched posture with head drawn in, often with closed eyes
- ruffled or dirty feathers unrelated to litter conditions
- unable to rise/walk due to injury or physical abnormality
- reluctance to eat or drink
- severely injured
- swollen head
- discoloured comb
- emaciation

Acceptable Methods of Euthanasia

The following list consists of euthanasia methods for individual birds[1] for use on-farm. The chart is based on the information that was available at the time of publishing. Further research under the oversight of a regulated research body may result in new, acceptable equipment and/or euthanasia methods that may be developed and become available during the life of this Code, or the elimination of some currently accepted practices.

For any method to be considered acceptable, it must render the bird insensible rapidly and the bird must not return to sensibility prior to death. Individuals who euthanize birds must be competent in the appropriate methods. Both handling and the time that the bird is restrained need to be minimized, as both are stressful for the bird.

Method	Special Considerations
Physical Methods	• Euthanasia method should be chosen based on the welfare of the bird, human safety, skill and training of personnel, availability of equipment, and the ability to adequately restrain the bird (34)
Manual Cervical Dislocation	• There are a variety of techniques that may or may not be appropriate in that some methods do not result in rapid insensibility • The site of the dislocation must be as close to the head as possible • Other methods should be considered when large numbers are to be euthanized due to operator fatigue
Blunt Force Trauma to the Head	• There are a variety of instruments that may be used. The method of restraint and the location where the force is applied has a significant impact on whether rapid insensibility is achieved • This method may be preferred over cervical dislocation for birds that have broken or injured legs • Can be used to render a bird insensible as the first step in a two-step method of euthanasia (e.g. cervical dislocation, decapitation) • Due to the impact on operators and observers, other methods should be considered, especially when large numbers are to be euthanized
Non-Penetrating Captive Bolt	• Ensure that the device is designed and set to deliver the required amount of force and that it is placed in the proper position on the head
Decapitation	• Instrument must be sharp • The head must be completely severed from the body in one stroke • Requires adequate restraint and containment
Inhaled Agents: Carbon Dioxide (CO_2), Carbon Monoxide (CO), Argon (Ar), Nitrogen (N)	• Acceptable only with properly-maintained, proven effective, purpose- designed equipment • When inhaled gases are used for euthanasia, birds should be checked to verify death because they may appear dead but can regain consciousness if the exposure time or the concentration of the agent is insufficient (34) • CO is dangerous to operators and must be used in a well-ventilated area • Euthanasia gases must be delivered in pure and commercially available form
Anesthetic Overdose	• Must be administered by a licensed veterinarian

[1] Adapted from 34,37,16.

Resources for Further Information

Housing Systems for Layers

- Ontario Ministry of Agriculture, Food and Rural Affairs. Urban Agriculture Business Information Bundle. www.omafra.gov.on.ca/english/livestock/urbanagbib/poultry.htm
- BC Ministry of Agriculture. Small Flock Poultry Health. http://www2.gov.bc.ca/assets/gov/farming- natural-resources-and-industry/agriculture-and-seafood/animal-and-crops/animal-production/_small_flock_manual.pdf

Health Management and Husbandry Practices

- The Alberta Environmental Farm Plan Company (2008) Rural Emergency Plan. www.ruralemergencyplan.com
- Canadian Food Inspection Agency (2009) National Avian On-Farm Biosecurity Standard. www.inspection.gc.ca/animals/terrestrial-animals/biosecurity/standards-and-principles/avian-on-farm/en_g/1375193894256/1375193980266
- Canadian Food Inspection Agency (updated 2014) General Producer Guide – National Avian On-Farm Biosecurity Standard. www.inspection.gc.ca/animals/terrestrial-animals/biosecurity/standards-and- principles/general-producer-guide/eng/1398640321596/1398640379048
- Canadian Food Inspection Agency (Updated 2012) How to Prevent and Detect Disease in Backyard Flocks and Pet Birds. www.inspection.gc.ca/animals/terrestrial-animals/diseases/bird-health-basics/eng/132 3643634523/1323644740109
- FeatherWel-Promoting Bird Welfare. Improving Feather Cover – A guide to reducing the risk of injurious pecking occurring in non-cage laying hens. www.featherwel.org/Portals/3/Documents/Advice_guide_%20 V1.2%20%20May%202013.pdf
- Department for Environment, Food and Rural Affairs (DEFRA) A guide to the practical management of feather pecking & cannibalism in free range laying hens. www.gov.uk/government/uploads/system/ uploads/attachment_data/file/69374/pb10596-feather-pecking-050309.pdf
- Ministry of Agriculture and Food and Ministry of Rural Affairs (2013) Rodent Control in Livestock and Poultry Facilities. www.omafra.gov.on.ca/english/livestock/dairy/facts/13-057.htm
- Alberta Agriculture and Rural Development, Environmental Stewardship Division. A Guide for the Control of Flies in Alberta Confined Feeding Operations. www1.agric.gov.ab.ca/$department/deptdocs.nsf/ all/epw12257
- Canadian Veterinary Medical Association. Induced Moulting of Poultry - Position Statement. https://www. canadianveterinarians.net/documents/induced-moulting-of-poultry
- Canadian Food Inspection Agency (2012) Fact Sheet - Mycotoxins. www.inspection.gc.ca/animals/ feeds/regulatory-guidance/rg-8/eng/1347383943203/1347384015909?chap=1#s1c1
- Government of Canada. Reportable Diseases Regulations. laws-lois.justice.gc.ca/eng/regulations/sor-91- 2/page-1.html

Handling and Transportation

- Ontario Farm Animal Council, Poultry Industry Council, Ontario Ministry of Agriculture Food and Rural Affairs (2012) Should this Bird be Loaded? A guide for preparing, loading, and transporting poultry. http://www.poultryindustrycouncil.ca/wp-content/uploads/2017/03/DT-Handbook-final._compressed.pdf
- Poultry Service Association (2017) Poultry Handling and Transportation Manual. http://www.poultryserviceassociation.com/uploads/2/7/9/6/27967763/2017_poultry_handling_and__transportation_manual.pdf
- Canadian Agri-Food Research Council (2001) Recommended code of practice for the care and handling of farm animals – Transportation. www.nfacc.ca/codes-of-practice/transport

- National Farm Animal Care Council (2016) Code of Practice for the Care and Handling of Hatching Eggs, Breeders, Chickens, and Turkeys. www.nfacc.ca/codes-of-practice/chickens-turkeys-and-breeders

Euthanasia

- Poultry Industry Council (2016) Practical Guidelines for On-Farm Euthanasia of Poultry. www.poultryindustrycouncil.ca/resources/euthanasia-resources-training-materials/

Participants

Code Development Committee Members

Role	Committee Member	
Producer	Glen Jennings (Chair)	Egg Farmers of Canada
	Hannah Searle	Egg Farmers of Canada
	Hubert Schillings	Egg Farmers of Canada
	Walter Siemens	Egg Farmers of Canada
Pullet Grower	Andy DeWeerd	Pullet Growers of Canada
Veterinarian	Mike Petrik D.V.M., M.Sc.	Canadian Veterinary Medical Association
Animal Welfare	Ian J.H. Duncan Ph.D.	Canadian Federation of Humane Societies
Animal Welfare Enforcement	Penny Lawlis M.Sc.	Ontario Ministry of Agriculture and Food; Ministry of Rural Affairs
Processor	Leanne Cooley M.Sc.	Canadian Poultry and Egg Processors Council
	Helen Anne Hudson Ph.D	Canadian Poultry and Egg Processors Council
	Diane Brodeur D.V.M	Canadian Poultry and Egg Processors Council
Research/Academic	Tina M. Widowski Ph.D.	Scientific Committee Chair
Transporter	David Robert	Maple Lodge Farms Ltd.
Retail	Carole Fortin LL.B., M.B.A.	Retail Council of Canada.
Technical Expertise	George A. Ansah Ph.D.	Hendrix Genetics
Federal Government	Réjean Gaumond	Agriculture and Agri-Food Canada
	Michelle Groleau D.V.M	Canadian Food Inspection Agency
Industry Liaison (Ex-Officio)	Chris Nash	Egg Farmers of Canada

Scientific Committee Members

Organization	Representative
World's Poultry Science Association	Tina M. Widowski B.S., M.S., Ph.D. (Chair)
Canadian Society of Animal Science	Henry Classen B.S.A., M.S., Ph.D., P.Ag.
International Society of Applied Ethology	Ruth C. Newberry Ph.D
Canadian Veterinary Medical Association	Mike Petrik D.V.M., M.Sc.
World's Poultry Science Association	Karen Schwean-Lardner B.S., M.S., Ph.D.
Egg Farmers of Canada	Bernadette Cox (Ex-officio)

The Code Development Committee would like to thank Margo Ladouceur and Geoff Urton, both of whom contributed to this process as Standing Observers, as well as Betsy Sharples who served as Code Development Secretary. The Code Development Committee would also like to acknowledge and thank the members of the Scientific Committee; Stephanie Yue Cottee for her work as Research Writer; Dr. Stephanie Torrey who served as the Peer Review Coordinator; and the anonymous peer reviewers of the Poultry (Layer) Scientific Committee Report.

Participants (continued)

The Committee appreciates the valuable input from the public comment period and all those who provided comments and advice throughout the process.

Code Amendment Committee Members

The Code Amendment Committee (2024 – 2025) deliberated and reached consensus on amendments to the 2017 Code of Practice.

Role	Representative	Organization
Producer	Glen Jennings (Chair)	Egg Farmers of Canada
	Walter Siemens	Egg Farmers of Canada
	Jeff Clarke	Egg Farmers of Canada
	Dan Veldman	Egg Farmers of Canada
	Lisa-Anne Girard	Egg Farmers of Canada
Pullet Grower	Alvin Brunsveld	Pullet Growers of Canada
Veterinarian	Mike Petrik D.V.M., M.Sc.	Canadian Veterianary Medical Association
Animal Welfare Advocacy Association	Michelle Jendral	World Animal Protection- Canada
Provincial Animal Protection (Enforcement)	Don Ferguson	Animal Protection Services of Saskatchewan
Provincial Government Representative (AW Responsibilities – FPAW)	Lucica Rosca (Luci).	Ontario Ministry of Agriculture, Food & Rural Affairs
Retail and food service organization	Kimberley Kerr	Retail Council of Canada
Processor and/or Grader	Michelle Shaw	Canadian Poultry and Egg Processors
	Leanne Cooley	Canadian Poultry and Egg Processors
Federal Government	Angela Rouillard	Agriculture and Agri-Food Canada
Researcher/Academic	Tina Widowski	Scientific Panel (SP) Chair

Scientific Committee Members

Organization	Representative
World's Poultry Science Association	Tina M. Widowski B.S., M.S., Ph.D. (Chair)
World's Poultry Science Association	Alexandra Harlander, DVM, DVSc, PhD, DECAWBM (AWSEL)
Canadian Veterinary Medical Association	Mike Petrik D.V.M., M.Sc.

Participants are defined as per NFACC's Guiding Principles for Codes of Practice.

The expertise and contributions of all committee members were greatly appreciated.The Committee appreciates the valuable input from the public comment period and all those who provided comments and advice throughout the process.

Summary of Code Requirements

The following is a list of the Requirements within the *Code of Practice for the Care and Handling of Pullets and Laying Hens*. Refer to the cited Code section for further context about the Requirements.

SECTION 1 Pullet Housing and Rearing

1.1.1 Housing Equipment: Design and Construction

- Materials used in the construction of housing and equipment to which birds have access must not be harmful or toxic to the birds, and must be able to be thoroughly cleaned and maintained.

1.1.2 Flooring

- Flooring must be designed, constructed, and maintained in a manner that supports the birds' feet and does not contribute to trapping, injuries, or deformities to the birds' legs, feet, and/or toes.
- Housing system floors must be designed and maintained to prevent manure from birds in upper levels from dropping on birds enclosed directly below.
- Existing flow-through pullet cage systems must be replaced by January 1, 2020.

1.1.3 Feeders and Waterers

- Feed space and waterers (e.g., cups, nipple drinkers) must be provided as indicated in Table 1.1.
- All birds must have access to at least 2 waterers (e.g., cups, nipple drinkers) in case one breaks down.
- Automated feeding systems must be designed and utilized in ways that minimize the likelihood of chicks getting caught in them.

1.1.4 Space Allowance

- Birds must be able to stand fully in an upright position within the enclosure.
- Each bird must be provided with minimum space allowances as outlined in:
  - Table 1.2 (Pullet Cages)
  - Table 1.3 (Multi-Tier Rearing Systems to 8 weeks of age)
- For Multi-Tier Rearing Systems installed prior to August 1, 2025, each bird must be provided with a minimum space allowance and applicable litter space as outlined in Table 1.4 (Mutli-Tier Rearing Systems from 8 weeks of age – Barns in use prior to August 1, 2025)
- For Multi-Tier Rearing Systems for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after August 1, 2025, each bird must be provided with a minimum space allowance and applicable litter space as outlined in Table 1.5 (Multi-Tier Rearing Systems from 8 weeks of age – New Construction)
- In Single-Tier Rearing Systems, each pullet from 8 weeks of age until transfer to the laying barn must be provided with a minimum of 696.8 cm^2 (108 sq in / 0.75 sq ft) of useable space.

1.1.5 Special Considerations for Multi-Tier Rearing Systems

- Tiers must be arranged to prevent droppings from falling directly on levels below.
- The number of tiers in a vertical plane (i.e., directly above each other) must not exceed 3 where the ground level is not considered to be one tier.
- Feed and water must be provided on more than one elevation of the system, and must not be provided on the ground level.

Summary of Code Requirements (continued)

1.1.6 Perches

- Perches must be provided to chicks reared in multi-tier systems from 1 day of age.
- Terraces and/or elevated perches at varying heights must be provided from no later than 8 weeks of age in multi-tier rearing systems.
- Perches must be constructed of materials that are easily cleaned and do not harbour mites.
- Perches must be designed to prevent injury to pullets that are mounting or dismounting as well as to any pullets nearby.
- Perches must be positioned to prevent trapping and allow access to feed and water.
- Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them.

1.2 Receiving and Brooding Chicks

- Facilities must be prepared (i.e., heat, clean, feed, water, bedding) in advance of receiving chicks so that they can be placed promptly after arrival.
- Farm personnel must be present at the time of delivery and placement, and must assess the physical condition of the chicks.
- Steps must be taken to prevent chicks from becoming chilled or overheated during unloading and brooding.
- All chicks must be kept, treated, and handled in ways that prevent injury and minimize stress.

1.3 Lighting

- Chicks must be provided with a minimum of 2 consecutive hours of darkness in each 24 hour period.
- The dark period must be gradually increased to a total minimum of 6 hours in each 24 hour period by 2 weeks of age.
- Chicks must be provided with a minimum of 16 hours of light in each 24 hour period up to 2 weeks of age.
- Chicks must be provided with light intensities of at least 20 lux (2 foot candles) for at least the first 7 days that allow them to easily locate feed and water.

SECTION 2 Housing Systems for Layers

2.1 Housing and Equipment: Design and Construction

- Materials used in the construction of housing and equipment to which birds have access must not be harmful or toxic to birds, and must be able to be thoroughly cleaned and maintained.
- Openings and access points must permit placement of pullets and removal of full grown layers of all breeds without injury.

2.2 Flooring

- Flooring must be designed, constructed, and maintained in a manner that does not contribute to injuries or deformities to the birds' legs, feet, and/or toes.
- All slatted, wire, or perforated floors must be constructed to support the forward facing claws.
- The slope of any slat or wire floor or solid surface that is included in the useable space calculation must not exceed 8 degrees (14%).
- Housing system floors must be designed and maintained to prevent manure from birds in upper levels from dropping on birds enclosed directly below.

Summary of Code Requirements (continued)

2.3 Feeders and Waterers

- Accessible feed space must be provided at a minimum rate of 7.0 cm (2.8 in) per bird for linear feeders, and 2.8 cm (1.1 in) for round feeders.
- All birds must have access to:
  - a minimum of one waterer for every 12 birds
  - at least 2 water sources (e.g., nipple drinkers, cups), or a minimum of 1 bell drinker/100 hens, or a minimum of 1.3 linear cm (0.5 in) of water trough space per hen when straight troughs are used.

2.5 Transitioning from Conventional Cages

- All housing systems to which hens are transitioned must support nesting, perching, and foraging (pecking and scratching) behaviour.
- If any hens have not been transitioned from conventional cages by July 1, 2031, each of those hens still kept in conventional cages must be provided with a minimum space allowance in those systems of 580.6 cm^2 (90.0 sq in), effective July 1, 2031.
- All hens must be housed in enriched cage or non-cage housing systems that meet this Code's requirements by July 1, 2036.
- Enriched cages installed after January 1, 2032, must be designed to include amenities that provide hens with improved opportunities to forage and dust bathe.

2.5.1 Space Allowance

Final Space Allowance Requirements

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- For Enriched Cage and Non-Cage housing, a minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level.
- For Enriched Cages, each hen must be provided with a minimum of 750.0 cm^2 (116.25 sq in) of total space, including nests, of which 600.0 cm^2 (93.0 sq in) does not include nest boxes.
- For Non-Cage systems, each hen must be provided with the following minimum useable space allowance (which does not include nest space):
  - Single-Tier – All litter barns: 1,900.0 cm^2 (294.5 sq in/2.05 sq ft)
  - Single-Tier – Combination of wire, slats, litter: 929.0 cm^2 (144.0 sq in/1.0 sq ft)
  - Multi-Tier – Combination of wire, slats, litter: 929.0 cm^2 (144.0 sq in/1.0 sq ft).

Transitional Space Allowance Requirements Effective for flocks placed after April 1, 2017:

- For Enriched Cage and Non-Cage housing, a minimum height of 45.0 cm (17.7 in) must be provided between the floor and ceiling of each level. (F)
- For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with a minimum space allowance of 580.6 cm^2 (90.0 sq in).

Summary of Code Requirements (continued)

Effective for flocks placed after January 1, 2020:

- For Conventional Cages installed prior to July 1, 2016, each bird must be provided with a minimum space allowance of 432.0 cm^2 (67.0 sq in) for white birds and 484.0 cm^2 (75.0 sq in) for brown birds.
- For Non-Cage systems installed prior to April 1, 2017 that have at least 50% of the useable space as slats or wires, each hen must be provided with the following minimum useable space allowance (which does not include nest space):
  - 929.0 cm^2 (144.0 sq in/1.0 sq ft) if a minimum of 15.0 cm (5.9 in) of perch space per hen is provided, OR
  - 1,115 cm^2 (172.8 sq in/1.2 sq ft) if perch space of at least 7.6 cm (3.0 in) but less than 15.0 cm (5.9 in) per hen is provided.

Effective for flocks placed after January 1, 2022:

- For Enriched Cages, each hen must be provided with a minimum of 750.0 cm^2 (116.25 sq in) of total space, including nests, of which 600.0 cm^2 (93.0 sq in) does not include nest boxes. (F)

2.5.2 Nesting

Final Nesting Requirements

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- The nest space must be enclosed on at least three sides to provide privacy and shading.
- Where nest curtains are used, they must extend close to the floor (without impeding the flow of eggs).
- The nest area must not contain drinkers, feeders, or perches.
- The space between the nest area and the useable feed trough must be at least 15.2 cm (6.0 in).
- The floor of the nest area must be covered with a surface that promotes nesting and prevents injury.
- For Enriched Cages, each must be provided with nest space area at a minimum of 65.0 cm^2 (10.0 sq in).
- For Non-Cage systems:
  - Each hen must be provided with nest space area at a minimum of 83.2 cm^2 (12.9 sq in) [1.0 m^2 (10.8 sq ft) for each 120 hens]
  - Nest space must not be included when calculating useable space allowance.

Transitional Nesting Requirements

Effective for flocks placed after April 1, 2017:

- For Cages with Furnishings installed prior to April 1, 2017, each hen must be provided with nest space area of a minimum of 40.6 cm^2 (6.3 sq in).
- The nest space must be enclosed on at least three sides to provide privacy and shading. (F)
- Where nest curtains are used, they must extend close to the floor (without impeding the flow of eggs). (F)
- The nest area must not contain drinkers, feeders, or perches. (F)
- The space between the nest area and the useable feed trough must be at least 15.2 cm (6.0 in). (F)
- The floor of the nest area must be covered with a surface that promotes nesting and prevents injury. (F)

Summary of Code Requirements (continued)

Effective for flocks placed after January 1, 2020:

- For Non-Cage systems installed prior to April 1, 2017: (F)
  - Each hen must be provided with a minimum nest space area of 83.2 cm^2 (12.9 sq in) [1 m^2 (10.8 sq ft) for each 120 hens]
  - Nest space must not be included when calculating useable space allowance.

Effective for flocks placed after January 1, 2022:

- For Enriched Cages, each hen must be provided with a minimum nest space area of 65.0 cm^2 (10.0 sq in). (F)

2.5.3 Perching

Final Perching Requirements

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- Each hen must be provided with a minimum linear length of 15.0 cm (5.9 in) of useable, purpose- designed, elevated perch space.
- Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them.
- Perches must be constructed of materials that are easily cleaned and do not harbour mites.
- Perches must be designed to minimize injury to hens that are mounting or dismounting as well as to any hens nearby.
- Perches must not extend into nests.
- Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture.
- For Non-Cage Systems:
  - At least 20% of the perch space must be elevated a minimum of 40.0 cm (15.7 in) from any level or tier
  - The height of elevated perches must not exceed 1.0 m (39.4 in) above the closest floor or perch
  - Perches must be at least 19.0 cm (7.5 inches) from walls and from the top of the perch to the ceiling, stacked vertical perches (refer to Figure 2.1), or other structures
  - Adjacent perches separated by less than 19.0 cm (7.5 in) of vertical space must be at least 30.0 cm (11.8 in) apart horizontally to allow hens to perch simultaneously.

Transitional Perching Requirements

Effective for flocks placed after April 1, 2017:

- For Cages with Furnishings installed prior to April 1, 2017:
  - Each hen must be provided with a minimum linear length of 11.2 cm (4.4 in) of useable, purpose-designed, elevated perch space
  - Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them (F)
  - Perches must be constructed of materials that are easily cleaned and do not harbour mites (F)
  - Perches must be designed to minimize injury to hens that are mounting or dismounting as well as any hens nearby (F)
  - Perches must not extend into nests (F)
  - Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture. (F)

Summary of Code Requirements (continued)

Effective for flocks placed after January 1, 2020:

- For Non-Cage systems installed prior to April 1, 2017:
  - Each hen must be provided with a minimum of 7.6 linear cm (3.0 in) of useable, purpose-designed, elevated perch space
  - Perches must be positioned to minimize fecal fouling of birds, feeders, or drinkers located below them (F)
  - Perches must be constructed of materials that are easily cleaned and do not harbour mites (F)
  - Perches must be designed to minimize injury to hens that are mounting or dismounting as well as to any hens nearby (F)
  - Perches must not extend into nests (F)
  - Perches must be at least 1.9 cm (0.75 in) in width or diameter to allow hens to wrap their toes around the perch and balance evenly on it in a relaxed perching posture (F)
  - At least 20% of the perch space must be elevated a minimum of 40.0 cm (15.7 in) from any level or tier (F)
  - The height of elevated perches must not exceed 1.0 m (39.4 in) above the closest floor or perch (F)
  - Perches must be at least 19.0 cm (7.5 inches) from walls and from the top of the perch to the ceiling, stacked vertical perches (refer to Figure 2.1), or other structures (F)
  - Adjacent perches separated by less than 19 cm (7.5 in) of vertical space must be at least 30.0 cm (11.8 in) apart horizontally to allow hens to perch simultaneously. (F)

Effective for flocks placed after January 1, 2022:

- For Enriched Cages, each hen must be provided with a minimum linear length of 15.0 cm (5.9 in) of useable, purpose-designed, elevated perch space. (F)

2.5.4 Foraging and Dust Bathing

Final Foraging and Dust Bathing Requirements

Effective for all holdings for which new construction or re-tooling, including the phases of design, application, approval, planning, and installation, was initiated after April 1, 2017:

- For Enriched Cages, each hen must be provided with a minimum of 31.0 cm^2 (4.8 sq in) [774.2 cm^2 (120 sq in) for each 25 birds] of a flooring surface for foraging.
- Hens housed in litter-based systems must be provided with continuous access to litter.
- For Single-Tier systems:
  - At least 15% of the usable space must be litter
  - Hens must be provided with at least one foraging site for each 1,500 hens (e.g., bales of hay or straw, insoluble grit or oat hulls, or other material that provides foraging opportunities). Where multiple sites are provided, they must be evenly distributed.
- In Multi-Tier Systems, at least 33% of the usable space must be litter, except for up to 24 weeks of age, when the litter may be reduced to a minimum of 15% of the useable space.

Summary of Code Requirements (continued)

Transitional Foraging and Dust Bathing Requirements

Effective for flocks placed after April 1, 2017:

- For Cages with Furnishings installed prior to April 1, 2017, hens must be provided with a minimum of 24.8 cm^2 (3.8 sq in) [612.9 cm^2 (95 sq in) for each 25 birds] of a flooring surface for foraging.
- For Single-Tier systems installed prior to April 1, 2017, that are fully slatted, or where less than 15% of useable space is litter, a solid surface area of at least 1.5 m^2 (16.0 sq ft) for litter/substrate for dust bathing must be provided for each 1,000 hens. Where multiple sites are provided, they must be evenly distributed.
- Hens housed in litter-based systems must be provided with continuous access to litter. (F)
- For Single-Tier Systems, hens must be provided with at least one foraging site for each 1,500 hens (e.g., bales of hay or straw, insoluble grit or oat hulls, or other material that provides foraging opportunities). Where multiple sites are provided, they must be evenly distributed. (F)
- In Multi-Tier Systems, at least 33% of the usable space must be litter, except up to 24 weeks of age when the litter may be reduced to a minimum of 15% of the useable space. (F)

Effective for flocks placed after January 1, 2022:

- For Enriched Cages, each hen must be provided with an minimum of 31.0 cm^2 (4.8 sq in) [774.2 cm^2 (120 sq in) for each 25 birds] of a flooring surface for foraging. (F)

2.6 Special Considerations for Multi-Tier Systems

- Birds must be placed on the system near feed and water sources when moving birds to multi-tier systems.
- A minimum height of 45.0 cm (17.7 in) must be provided below the bottom of any tier.
- Tiers must be arranged to prevent droppings from falling directly on levels below.
- The number of tiers in a vertical plane (i.e., directly above each other) must not exceed 3 where the ground level is not considered to be one tier.
- Raised tiers must have a system for removal of manure that does not interfere with the birds or cause injury.

2.7.1 Housing and Range: Design and Construction

- Birds must have easy and continuous access to a structure that protects them from environmental conditions and meets the temperature and hygiene needs of the birds.
- Door openings from the barn to the range must be a minimum of 35.0 cm (13.8 in) high and 40.0 cm (15.7 in) wide and must be distributed throughout the barn so that all birds have access.
- There must be a means to restrict access to outdoors when bird health or welfare is at risk.
- Perimeter fencing must be provided and maintained to protect birds from ground predators.
- The openings to the range must be designed to minimize the adverse effects of weather to maintain good litter quality (Refer to *Section 3.5: Litter Management*).

2.7.2 Range Management

- The range area must be kept free of debris that may shelter pests.
- The outdoor range must be sited and maintained to manage range conditions that can negatively affect bird health or welfare.

2.7.3 Feeders and Waterers: Access to Outdoors

- If feed and water are provided outdoors, it must be in such a way that discourages access by wild birds.

Summary of Code Requirements (continued)

SECTION 3 Barn Environmental Management

3.1 Ventilation and Air Quality

- Environmental control systems must be designed, constructed, and maintained in a manner that allows for fresh air and hygienic conditions that promote health and welfare for birds.
- Action must be taken to manage ammonia levels if they reach a harmful range (e.g., 20 to 25 ppm).

3.2 Temperature

- Temperatures inside housing systems must be monitored on a daily basis.
- Temperatures inside housing systems must be maintained within a range that contributes to good health and welfare of the birds.
- Birds must be monitored for signs of cold or heat stress. Upon discovering birds showing signs of cold or heat stress, remedial action must be taken immediately.
- The environment for newly placed chicks must be pre-heated to breed-specific temperatures and maintained at a level that promotes good chick health and welfare.

3.4 Lighting

- Light intensity must be at least an average of 5 lux at feeders during the light phase where birds are kept in cages. Light intensity may only be reduced to correct injurious behaviour (e.g., feather pecking).
- Light intensity must be at least an average 10 lux in the hens' environment in non-cage multi-tier systems during the light phase, so that hens can navigate their surroundings.
- Where hens are housed in non-cage multi-tier systems or enriched cages under artificial light, the light intensity must be raised gradually or staged over a minimum period of 5 minutes and lowered gradually or staged over a minimum period of 15 minutes to give them sufficient time to roost and come off perches without causing injury.

3.5 Litter Management

- Litter must be of a good quality, and friable.
- Bedding that is added must not be harmful or toxic to birds.
- Litter condition must be monitored and managed to avoid levels of dustiness or dampness that could cause leg, respiratory, or other health problems such as the build-up of parasites or diseases.
- Litter that has become excessively wet (e.g., from a water leak, flood) must be removed promptly.
- Used litter must be removed between flocks.

SECTION 4 Feed and Water

4.1 Feed and Water Management

- Access to feed must be provided at all times and delivered in ways that minimize aggression, poor body condition, and injuries.
- Access to water in sufficient quantities must be provided to all birds at all times in normal circumstances, up until end of lay. Interruptions for the purposes of vaccinations or water system maintenance are acceptable.
- Feed that has become stale, mouldy, or contaminated must not be used, and must be replaced immediately.

Summary of Code Requirements (continued)

- Feeding and watering equipment must be monitored daily, and corrective action promptly taken when necessary.
- A plan must be in place to ensure that adequate supplies of suitable feed and water are available at all times, as well as in the event of on-farm emergencies such as power interruptions, mechanical breakdowns, and/or the need to remove and replace feed.

4.2 Nutrition

- All birds must receive feed that meets their daily nutrient requirements to maintain good health, meet physiological demands, and avoid metabolic and nutritional disorders.

4.3 Water

- Water must be palatable and not harmful to bird health.
- Water must be tested at least annually for the presence of coliforms and faecal coliforms, and corrective action must be taken if necessary.

SECTION 5 Health Management and Husbandry Practices

5.1 Pullet Sourcing and Transition to Lay

- Hens that will be housed in non-cage multi-tier systems must be sourced from non-cage rearing systems in which pullets had access to perches.

5.2 Health Management Plan

- A working relationship with a veterinarian must be established.
- Records on disease outbreaks, health problems, abnormal conditions noted and causes if known, and remedial actions taken must be maintained.

5.3 Skills Related to Flock Management

- Personnel must be knowledgeable of normal bird behaviour and signs of poor health, distress, and behaviour problems, or must work in conjunction with experienced personnel.

5.4 Disease Prevention and Management

- A biosecurity protocol must be developed, followed, and reviewed annually.
- All farm personnel must be aware of and understand their responsibilities in adhering to the biosecurity protocol.
- Visitors must not be allowed into the barn without proper supervision or permission, and access to production units by visitors must be monitored.
- Barns must be left empty for a minimum of 7 days between flocks.
- If signs of a disease are recognized or suspected, or if birds are showing signs of altered behaviour, or mortalities are greater than expected, action must be taken without delay to establish the cause, and/or appropriate intervention must be undertaken by a suitably qualified person.
- Mortalities must be recorded daily.

5.4.1 Sanitation

- Poultry barns and feeding, watering, and ventilation equipment must be cleaned and a disinfectant applied prior to the new flock being placed.

Summary of Code Requirements (continued)

5.4.2 Pest Control

- Measures must be taken to control pests including rodents, small animals, wild birds, insects, and predators.

5.5 Inspections

- Flocks must be inspected a minimum of twice daily. Such inspections must include: listening to and looking at the birds, checking for bird health and well-being; checking access to and availability of feed and water; operating condition of equipment; environmental conditions; and disposing mortalities.
- Appropriate methods or devices must be available to allow inspection of all birds.

5.6 Sick and Injured Birds

- Sick or injured birds must be promptly segregated for assessment and provided with appropriate care and/or treatment, or euthanized (Refer to *Section 7: Euthanasia*).
- Any suspected cases of reportable diseases must be reported to a veterinarian immediately.
- Birds that have been identified as sick or injured must be monitored at least twice daily, or at a frequency appropriate to their conditions. If not showing signs of recovery, birds must be euthanized in accordance with the on-farm euthanasia plan (Refer to *Section 7.1: On-Farm Euthanasia Plans*).
- Medication, vaccines, and supplements must be used only in accordance with the manufacturers' instructions unless veterinary advice has been given to vary from the directions.

5.7.1 Feather Pecking and Cannibalism

- Corrective action must be taken at the onset of an outbreak of feather pecking or cannibalism.
- Injured birds must be promptly segregated for assessment and provided with appropriate care and/ or treatment, or euthanized (Refer to *Section 7: Euthanasia*).

5.7.1.1 On-Farm Beak Trimming

- When planned on-farm, beak trimming of the new flock must be performed prior to 10 days of age.
- Beak trimming must not be performed on birds that are older than 10 days of age, unless deemed necessary for emergency welfare reasons after all other measures to control cannibalism have been exhausted. In such cases, beak trimming must be carried out with veterinary consultation and oversight.
- Beak trimming must be performed only by competent persons using industry approved methods that minimize bird discomfort and equipment that is properly maintained.
- The producer or a competent designated representative must be readily available throughout the beak trimming process.
- Do not remove more than one-third of the top beak, as measured from the tip to the entrance of the nostrils.

Summary of Code Requirements (continued)

5.8 Controlled Moulting

- Controlled moulting must not be undertaken unless in emergency or extenuating situations, at which time both nutritionist and veterinarian oversight is necessary.
- When necessary, controlled moulting must be induced using methods that do not involve feed withdrawal, and water must be available at all times.

5.9 Emergency Management and Preparedness

- An emergency plan for reasonably foreseeable problems that may affect bird welfare must be prepared and reviewed with all personnel.
- Emergency contact information must be readily available.
- At least one responsible individual must be available at all times to take necessary steps in the case of an emergency.
- A backup power system, where applicable, must be available to ensure that all electrically dependent mechanical systems necessary for bird health and well-being continue to operate during
  a power outage.
- All alarms and fail safe devices, including alternate power supply, must be regularly tested.

SECTION 6 Handling and Transportation

6.1 Pre-Transport Planning

- The catching and loading processes must be planned in advance to minimize bird handling and the amount of time needed to catch and load birds, and to ensure that each vehicle can leave promptly after loading.
- Pre-transport planning must take into consideration the type of housing system, the number of birds that will be shipped, and the number of containers that will be needed to ensure that maximum loading densities are not exceeded.

6.1.1 Feed and Water: Pre-Loading

- Pre-transport feed withdrawal must be managed to minimize the time that birds are off feed.
- Hens must be fed an appropriate layer ration until feed is withdrawn to maintain bone strength (8).
- Water must be available to the birds until catching commences.

6.2 Fitness for Transport

- In preparation for transport, the flock must be evaluated for health and fitness and those birds that are deemed unfit for transport must be euthanized, separated, or transported with special provisions[1] only if for veterinary care and treatment.
- Birds that are not loaded for transport must continue to be cared for in accordance with relevant sections of this Code (e.g., feed and water, temperature, ventilation, euthanasia).
- Birds that are visibly sick, injured, or wet, or birds otherwise deemed unfit for transport, must not be loaded.

[1] Section 139 (2) in Part XII (Transport of Animals) of the Health of Animals Regulations specifies four conditions that must be met when transporting unfit animals for veterinary care (32).

Summary of Code Requirements (continued)

6.3 Handling and Catching

- Crews must be overseen by the producer or a competent designated representative, who must be readily available throughout the catching and loading process.
- Corrective action must be taken if crews or individuals are observed handling birds in ways that compromise their welfare.
- All on-farm and contracted personnel involved in catching must be competent in handling birds, and must not handle birds in such a manner that causes injury or distress.
- Birds must be placed in transport containers gently and in a manner that allows them to rapidly regain an upright position.
- When catching birds, light intensity must be low enough to keep birds calm.
- Easy access to each cage must be provided for catchers.

6.4 Loading and Unloading

- The design, construction, space, state of repair, and use of containers and equipment must allow the birds to be loaded, conveyed, and unloaded in ways that minimize stress and/or injury.
- Containers with birds must be handled, moved, secured to vehicles, and unloaded in a manner that minimizes stress and/or injury to birds.
- Measures must be taken to prevent birds from becoming too hot or too cold or wet during loading and unloading.
- Steps must be taken to minimize the amount of time birds are kept in an inverted position during loading.
- The number of birds in each container must be determined prior to loading, taking into consideration the available container floor space, body size/weight, prevailing environmental conditions, and duration of transport.
- Birds must be loaded in containers in such a way that permits all of them to rest on the floor at the same time when evenly distributed.
- Containers must be visually inspected to ensure that no parts of birds are trapped prior to loading on the vehicle.

6.5 Facilities Design and Maintenance

- When building new barns or renovating existing barns or yards, the way in which birds are moved into and out of barns and/or cages must be taken into consideration with a view to facilitating safe and humane transfer of birds to and from the transport vehicles (e.g., tractor-trailer).
- Driveways and yards must be maintained to facilitate unobstructed, safe, and easy access by transport vehicles.

Summary of Code Requirements (continued)

SECTION 7 Euthanasia

7.1 On-Farm Euthanasia Plans

- An on-farm written euthanasia plan, that at a minimum includes the following elements, must be developed and followed:
  - methods of euthanasia
  - which birds have to be euthanized (refer to *Section 7.3: Decision Making around Euthanasia*)
  - a protocol to ensure that euthanasia is carried out in a timely manner
  - who is authorized to perform euthanasia.
- The on-farm euthanasia plan must be reviewed annually and revised as necessary.
- On-farm personnel who are responsible for identifying birds to be euthanized or for performing euthanasia must be aware of the plan and kept apprised of all amendments.

7.2 Skills and Knowledge

- Personnel must be competent in identifying birds that need to be euthanized.
- Individuals who euthanize birds must be competent in the appropriate euthanasia methods, as well as in determining insensibility.
- Personnel must be supervised until proven to be competent in their ability to euthanize birds.

7.3 Decision Making around Euthanasia

- Personnel must be competent in identifying birds that need to be euthanized.
- Sick or injured birds that are suffering and unlikely to recover must be euthanized without delay.

7.4 Methods of Euthanasia

- An acceptable method for euthanizing birds must be used. Refer to *Appendix E: Acceptable Methods of Euthanasia*.
- The method used to euthanize birds must be administered by a competent individual in a manner that minimizes pain or distress.
- Prior to being euthanized, birds must be handled in a manner that minimizes pain or suffering.
- All equipment used for euthanasia must be well maintained, used correctly, and not overloaded, so that it operates effectively and efficiently.
- The effectiveness of the application used must be evaluated, and action taken (e.g., repair, replace, alternative method employed) when failure occurs.
- An alternate back-up euthanasia method must be readily available whenever birds are euthanized, in case the primary method fails.
- Birds must be inspected to confirm insensibility immediately after the euthanasia method has been applied.
- If signs of sensibility are observed, a second application of an acceptable method must be immediately administered.
- Death must be confirmed before leaving birds and disposing carcasses.

SECTION 8 On-Farm Depopulation

- Death must be confirmed before disposal.

8.1 Planned On-Farm Depopulation

- In consultation with a veterinarian or other qualified advisor, a written protocol for planned on-farm depopulation must be developed for operations that depopulate on-farm.
- An acceptable method for euthanizing birds must be used. Refer to *Appendix E: Acceptable Methods of Euthanasia*.

8.2 Emergency On-Farm Depopulation

- An on-farm depopulation plan for emergency situations must be developed.
- Methods for destroying entire flocks on-farm must be as humane as possible given the circumstances and the need to balance the risk for further negative impacts on bird welfare.