



DEPOPULATION

CHILLING-FREEZING WORK INSTRUCTION & CHECKLIST

Used for: Fertile eggs only (50-80% gestation)



Ministry for Primary Industries
Manatū Ahu Matua



Contents

1. Purpose	3
2.Actions	3
2.1 Materials and personnel	4
2.2 Health and safety actions	4
2.3 Chilling and freezing procedures	5
3.Appendices	6
Appendix A: Key information	6
Appendix B: Examples of specific chilling / freezing equipment	7
Appendix C: Step-by-step instructions	8
Appendix D: Audit checklist	9
Appendix E: Example SOP: Depopulation by chilling or freezing (farmer/operator use only)	11
Appendix F: Fictional illustrative scenario (farmer/operator use only)	13

Disclaimer

This publication is for the purpose of supporting the New Zealand poultry industry in responding to disease outbreaks, including Highly Pathogenic Avian Influenza (HPAI), Newcastle Disease (ND), Infectious Bursal Disease (IBD), and Salmonella Enteritidis (SE). While every effort has been made to ensure the accuracy of the information presented, the Poultry Industry Association of New Zealand (PIANZ) and the Egg Producers Federation (EPF) accept no responsibility or liability for errors, omission, or opinion contained herein, nor for any consequences arising from decisions made based on this information.

1. Purpose

This work instruction and checklist outline the processes for humanely and effectively depopulating fertile eggs infected or suspected of having a notifiable disease such as Highly Pathogenic Avian Influenza (HPAI), using chilling and freezing.

Why this matters:

This process ensures a humane way to stop embryonic development and prevents hatching of potentially infected eggs.

🔗 Please read this document in conjunction with the *Standard, Depopulation Guidelines* and the *Disease Response Biosecurity Plan Guidebook* to ensure all procedures are followed correctly. Where a site already has a Standard Operating Procedure (SOP) for chilling-freezing which meets the requirements in the Standard, use the SOP.

In this document, “you” can refer to either an MPI person or a farmer/operator, depending on who is leading the response activities.

2.Actions

Before you start – know the workload challenge

To plan chilling and freezing depopulation properly, first figure out:

- **how** many fertile eggs need to be depopulated;
- **where** they are located and how they’ll be accessed.

🔗 Use Section B1 of your Disease Response Biosecurity Plan Template to help with this.

Knowing your load helps you:

- Select the right number and type of chiller or freezer equipment.
- Ensure you have enough trained personnel to carry out the task humanely and efficiently.
- Develop a clear health and safety plan, including fatigue management and Personal Protective Equipment (PPE).

☒ Set up a clean/dirty line and decontamination station for people and equipment.

☒ Ensure all personnel are skilled with the training, qualification or experience in the chilling and/or freezing depopulation techniques.

☒ Record numbers and outcomes for traceability and reporting.

Link depopulation with disposal and site decontamination plans.

🔗 **See Appendix A** for the key information about the chilling or freezing plan.

🔗 **See Appendix B** for chilling and freezing examples, to help plan your detailed approach.

🔗 **See Appendix C** for step-by-step instructions on how to carry out chilling / freezing depopulation.

2.1 Materials and personnel

These are the core elements that support good practice. You may need to scale up depending on the situation.

Category	Item
 Personal Protective Equipment (PPE)	• Personal Protective Equipment as outlined in the Health New Zealand guidance. • Antiseptic wipes, disinfectants and spray bottles. • First aid kit and paper towels.
 Equipment	• Packing: Eggs (50-80%¹ gestation only) to be delivered in trays. • Chiller/freezer to have the capacity for the volume of eggs being depopulated. Note: eggs must remain in the chiller / freezer until the eggs obtain a temperature of <4°C. • Calibrated temperature probes.

2.2 Health and safety actions

The on-site **written, health & safety plan** for using chilling or freezing for depopulation activities at the infected site, needs to cover risks associated with chilling or freezing during a disease incursion. If you're working with **contractors**, make sure you're familiar with and coordinate with their Health & Safety plans too.

This ensures everyone is working safely, understands the risks, and follows the right procedures to prevent disease spread.

This plan should cover:

- **entry and exit points** (watch for contamination), including disinfection steps for vehicles, equipment and personnel before departure and after arrival;
- **risk management for handling infected material;**
- **safe use of the chillers/freezers;**
- **movement controls** for vehicle, equipment and personnel movement through high-risk zones (e.g. near sheds, water sources, or red line boundaries);
- **PPE requirements** for all staff involved in chilling/freezing.

¹ Note: Embryonated eggs <50% gestation are considered non-sentient and are therefore not covered by the Animal Welfare Act.

Follow these rules:

- ☑ Conduct a health and safety briefing based on the site-specific plan.
- ☑ Keep accessways clear and safe for vehicles and machinery.
- ☑ Ensure adequate lighting, especially if working at night or in low visibility.
- ☑ Use trained and competent operators and ensure personnel can manage the volume of eggs. This includes personnel being able to take breaks.
- ☑ Wear correct PPE at all times.
- ☑ Stick to all biosecurity procedures, including recording and reporting any new risks.
- ☑ Handle eggs carefully to minimise the risk of breakage.
- ☑ Move spent eggs to disposal vehicles without contaminating the environment. Follow the *Disposal Guideline which includes biosecure transport*.

🔗 Refer to: [Avian influenza health and safety guidance for workplaces – Health New Zealand | Te Whatu Ora](#)

2.3 Chilling and freezing procedures

Where there is one, use the site's SOP for chilling/freezing depopulation. Before starting, check it against the Depopulation Guideline and Standard, to ensure it meets required standards. If it doesn't, update it or arrange an alternative method. If no SOP exists, create one using the *Depopulation Guideline and Standard*.

Auditors will use the **Chilling / Freezing Audit Checklist** to confirm all required steps are completed.

🔗 **See Appendix D** for the audit checklist that helps to assess if all the required steps have been covered.

For farmers/operators:

- 🔗 **See Appendices C and E** for help with writing your chilling / freezing SOP.
- 🔗 **See Appendix F** for case studies that show what to expect in real-world scenarios.

Tip: Plan depopulation and disposal together to meet disposal timelines. Follow the *Disposal Guideline and Standard* which includes biosecure transport, when disposing of fertile eggs.

3. Appendices

Appendix A: Key information

Purpose

Chilling and freezing reduce egg temperature to below 4°C halts embryonic development and ensures humane depopulation. This method is approved for fertile eggs 50-80% gestation.

Operator considerations

- Only eggs 50-80% gestation may be used.
- Requires access to calibrated chilling/freezing equipment.
- Staff must be trained in handling and temperature monitoring.
- Depopulation and disposal must be planned together to meet biosecurity timelines.

Health and safety

- Chilling/freezing is non-invasive and reduces handling stress.
- PPE must be worn at all times to reduce disease exposure risk.

Minimum standard

Under the *New Zealand Code of Welfare: Layer Hens (Minimum Standard 17 - Humane Destruction)* & *Meat Chickens (Minimum Standard 16 – Humane Destruction)*:

- Operators must be trained and follow SOPs.
- Equipment must be capable of achieving and maintaining <4°C.
- Eggs must be handled gently and disposed of via biosecure transport.

Appendix B: Examples of specific chilling / freezing equipment

Options and considerations

- Commercial chillers: Ideal for large volumes; consistent temperature control.
- Blast freezers: Rapid cooling; useful for urgent depopulation.
- Portable freezer units: Flexible for remote or small-scale operations.
- Cold storage rooms: Suitable for gradual chilling in controlled environments.

Commercial chiller:



Commercial blast freezer & chiller:



Portable freezer unit:



Cold storage rooms:



Appendix C: Step-by-step instructions

☒ Pre-start checklist

Action	Complete (Yes / No)
Health and safety plan in place	
Site map prepared	
Depopulation plan (who, how, when) with egg age considered	
Staff skilled with the training, qualification or experience in chilling/freezing	
Method chosen	
Roster includes rest breaks	

Step 1: PPE requirements

All personnel must wear:

- gumboots;
- long-sleeved gloves;
- coveralls;
- Safety glasses or full-face shield;
- N95 mask.

Step 2: Egg selection and packing

- Select only fertile eggs 50-80% gestation.
- Place eggs in trays.
- Avoid over stacking to ensure even cooling.

Step 3: Chilling / freezing process

- Load trays into pre-cooled chiller/freezer.
- Use calibrated temperature probes to monitor internal egg temperature.
- Maintain eggs in unit until temperature of eggs reaches <4°C.
- Record temperature readings and duration.

Step 4: Disposal

- Transfer eggs to disposal vehicle using biosecure methods.
- Avoid contamination of environment or equipment.
- Follow the Disposal Guideline, which includes biosecure transport.

Appendix D: Audit checklist

GENERAL

Farm Contact Name:		Contact Ph:	
Farm and Address:			
Movement Control Permit/s Number/s (as required):			

DOCUMENTATION

Document	Comment	Acceptable Y/N
Procedures (SOP)		
Contract related Statement of Work (where appropriate)		
Site health and safety procedures		
Movement control permits, if required		

RECORDS

Records	Comment	Acceptable Y/N
Numbers of eggs depopulated (only fertile eggs 50-80% gestation)		
Adequate number of staff		
Training records for chilling / freezing		
Temperature monitoring logs		
Record of corrective actions if chilling / freezing failed		
Monitoring of loading of disposal vehicle (as applicable)		

REALITY (confirm that what is observed is consistent with the procedures and records viewed)

Section	Action	Comment	Acceptable Y/N
Depopulation	Ensure sufficient staff are present		
	Observation of monitoring temperature of eggs to ensure <4°C achieved		
	Observation of corrective actions if chilling/freezing failed		
	Observation of loading of disposal vehicle (as applicable)		

Appendix E: Example SOP: Depopulation by chilling or freezing (farmer/operator use only)

Purpose

To ensure the humane, safe, and effective depopulation of fertile eggs 50-80% gestation infected with, or suspected of having, a notifiable disease such as Highly Pathogenic Avian Influenza (HPAI), using chilling or freezing. This supports disease containment, protects animal welfare, and minimises risks to human health and the environment.

Scope

This SOP applies to all chilling or freezing depopulation activities involving fertile poultry eggs 50-80% gestation during a biosecurity response on infected premises.

Responsibilities

- **Premise operator:** oversees depopulation activities and ensures SOP compliance.
- **Depopulation team leader:** coordinates personnel, equipment, and safety procedures.
- **Trained operators:** carry out humane depopulation using chilling or freezing.
- **Support staff:** assist with egg handling, movement, and record-keeping.

Materials and equipment

- **Freezers or chillers**
- **Crates**
- **PPE:**
 - Coveralls
 - Gloves
 - N95 masks
 - Eye protection
 - Hearing protection
- **Disinfectant and cleaning supplies**
- **First aid kit**
- **Record sheets and verification checklist**

Procedure

1. Conduct a pre-operation briefing covering:

- PPE requirements
- Fatigue management and rest breaks
- Emergency procedures
- Biosecurity protocols
- Animal welfare expectations

2. Depopulation process:

- Handle eggs gently
- Move and maintain the fertile eggs within the chiller or freezer until eggs confirmed at $<4^{\circ}\text{C}$
- Record each batch depopulated

3. Post-depopulation:

- Move eggs to disposal site using biosecure transport
- Clean and disinfect all equipment and PPE
- Complete all required records and verification checklists
- Debrief team and report any incidents or issues

Records:

- Depopulation Verification Checklist
- Daily activity logs
- PPE and waste disposal records
- Training records for operators
- Corrective and preventative action reports
- Movement control permits (if applicable)

Appendix F: Fictional illustrative scenario (farmer/operator use only)

Freezing out our fertile eggs after bird flu hit²

The day we got the HPAI positive result, everything stopped. We're a broiler breeder operation, and at that moment, we had 120,000 fertile eggs sitting in cold storage and setter trays. MPI told us: every single egg had to go. No exceptions.

We couldn't compost them, they were clean, intact, and full of potential life. The only approved option was freezing. So we lined up every portable freezer unit we could hire and converted one of our cold rooms into a blast freezer zone.

It sounded simple. It wasn't.

- Volume: 120,000 eggs is a mountain. We worked in shifts for three straight days.
- Process: Load trays, stack them carefully so they didn't crack, and wheel them into the freezers. Wait for the temperature to hit -18°C and hold. Then move them out for disposal.
- Space: We ran out of freezer space fast. We had to rotate batches and monitor temperatures constantly.

The hardest part wasn't the logistics; it was the feeling. These eggs represented weeks of planning, feed, and care. Watching them freeze solid felt wrong, but we knew it was the only way to stop the virus from spreading.

The team was quiet most of the time. Everyone knew what was at stake. We took breaks to warm up and clear our heads. Even then, the cold got into your bones, and the emotional weight didn't lift until the last tray was done.

Downstream Impacts

- Hatchery disruption: No chicks meant empty incubators and idle staff for weeks, even after we had decontaminated the whole site.
- Supply chain ripple: Broiler growers downstream had no birds to place, leaving sheds empty and income lost.
- Breeding program setback: Genetic lines we'd been working on were wiped out, forcing us to restart selection cycles.
- Financial hit: Feed, labour, and energy costs sunk into eggs that never hatched.
- Customer confidence: Export partners needed reassurance that biosecurity controls worked.

What I learned?

- Freezing takes time so plan for space and rotation.
- Have extra hands for loading and monitoring.
- Build in mental breaks. This isn't just physical work; it hits hard emotionally.
- Communicate early with hatcheries and growers as they'll feel the impact too.

² This is a fictional scenario for illustrative purposes only.