

Technical Note No 18

On-farm Slaughter of Poultry for Disease Control

Summary

Birds kept for commercial purposes are usually transported to processing plants to be slaughtered for human consumption, but in certain situations whole flocks of poultry may have to be slaughtered on-farm. The main reason for this is to deal with outbreaks of infectious, notifiable diseases such as Newcastle Disease or Avian Influenza.

This Technical Note focuses on the slaughter or killing methods which can legally be used for the humane disposal of large poultry flocks on-farm (depopulation). It aims to provide constructive, practical advice to maximise bird welfare.

Anyone involved in the slaughter of poultry for disease control must be aware of the animal welfare implications when killing large numbers of birds on-farm. Individuals involved must be appropriately trained to prevent birds from suffering unnecessarily.

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Legislation

When slaughtering birds on-farm for disease control purposes, there is a range of UK/EU legislation of which you need to be aware. This is in place to safeguard bird welfare and to help prevent the further spread of disease. The legislation requires that, before any depopulation proceeds, an action-plan is drawn up by the competent authority (the Secretary of State) which ensures that appropriate action is taken to safeguard the welfare of the animals in the best available conditions. It is an offence to cause any animal “avoidable pain, distress or suffering during their killing and related operations”. However, in exceptional circumstances the competent authority may grant derogations from the legal provisions where it considers that compliance is likely to affect human health, or significantly slow down the process of eradication of a disease. Where the competent authority grants a derogation, it must publish notice in writing of that decision which may be:

- (a) subject to conditions
- (b) published in such a manner as the competent authority thinks fit
- (c) amended, suspended or revoked in writing

It is also important that checks are made with the Local Authority for suitable carcass disposal methods before proceeding with any method of on-farm killing.

Options available

The permitted methods for the slaughter or killing of poultry for the purpose of disease control are:

- 1) **Cervical dislocation or a percussive blow to the head** (limited to 70 animals/day/person)
- 2) **Percussive (mechanical) stunning**
- 3) **Killing by electrocution**
- 4) **Killing by exposure to lethal gas mixtures**
- 5) **Lethal injection**
- 6) **Free bullet***

***This method is impractical and, from a health and safety point of view, not advisable for the on-farm killing of large flocks of poultry.**

Cervical Dislocation/Percussive blow to the head

Cervical dislocation without prior stunning is a legal method of killing poultry. As such, it must induce immediate unconsciousness without causing pain or suffering. In practice this is very difficult to achieve, as neck dislocation does not consistently concuss the brain and is unlikely to cause immediate insensibility. Similarly, a percussive blow to the head runs the risk of the blow being misplaced and, therefore, not inducing immediate unconsciousness without causing pain or suffering.

These methods should only be used in a disease control situation where better methods are not available and only by competent staff who are fully trained in their use. Under (EC) 1099/2009 manual cervical dislocation must not be carried out on birds over 3 kg. Both methods are limited to a maximum of 70 birds per person per day.

Percussive stunning

The Cash Poultry Killer (CPK) is a mechanically operated instrument that has been specifically developed to kill poultry. This type of device applies a severe blow to the bird's skull to render it immediately unconscious. When applied correctly, the blow delivered by the CPK will kill the bird. This device has been designed specifically to kill poultry in emergency situations or for disease control.

Two types of CPK are currently available; an air-powered device which was initially developed for use on the production line in slaughterhouses and a cartridge-powered tool for on-farm use where an independent power source is essential.



Cartridge-powered CPK

It should be noted however, that although the cartridge-powered device is suitable for killing small numbers of birds on-farm, it would not be practical for killing large numbers as the cartridge has to be replaced each time the CPK is fired, which limits the rate at which birds can be killed. The device may also overheat when used continuously over extended periods of time. In situations where large numbers of birds have to be culled on-farm the air-powered CPK would be a better alternative.

Killing by electrocution

Equipment has been manufactured for the on-farm killing of poultry by electrocution, but this is not currently available in the UK. The system uses standard electrical waterbath equipment with the voltage increased to a level where it is ensured that all birds are killed immediately within the waterbath, therefore they do not need to be bled afterwards.

These mobile electrical waterbath systems were used in the 2003 outbreak of Avian Influenza in the Netherlands and were found to be capable of killing large numbers of birds, as long as the supply of birds was consistent. Other advantages are that these systems have relatively low running costs and are simple to clean and disinfect. However, birds do have to be handled and removed from the poultry sheds, inverted and then shackled live, which is not only a welfare issue but potentially a health and safety issue if birds are infected with a zoonotic disease. It also needs to be considered that the equipment is an expensive initial investment and mains electricity is required.



Figure 2: Mobile electrical waterbath stun/kill system

Killing by exposure to lethal gas mixtures

In a disease control situation birds can be killed by '*...exposure to carbon dioxide or a lethal combination of other gases or gas mixtures.*' There are currently two gas killing methods which are likely to be used in the UK for killing birds in a disease control situation and these are: either in-house gas killing, or gas killing in containers.

- **In-house gas killing**

Flocks can be killed for disease-control purposes without removing them from their sheds. This can be facilitated in two ways: by the use of nitrogen-filled foam, or by filling the house with 100% carbon dioxide. The latter requires the sheds to be sealed but, at present, the UK does not have the capability to carry out this technique. In extremis, eg where a serious zoonotic disease is present, flocks may be killed by 'ventilation shutdown'; however, this would require signing off by a cabinet minister.

- **Gas killing in containers**

This particular gas killing system was researched by Bristol University and developed in conjunction with staff of the UK State Veterinary Service and Defra, with the Humane Slaughter Association (HSA) being involved in the final stages.

The Containerised Gassing Unit (CGU) is a portable system that kills birds through anoxia (lack of oxygen). Birds are placed inside a standard industry transport module and loaded into a solid rectangular gas-tight steel container with a hinged door with two inlets for gas and two outlets through which air is displaced. The CGU is then filled with the gas mixture which enters at the bottom and rises to the top, displacing air as it does so. It is essential that the oxygen level in the CGU is brought below 5% and is maintained at this level until all birds are dead.



Figure 3: Containerised Gassing Unit (CGU)

The gas used with this system is a mixture of 80% by volume of argon and 20% by volume carbon dioxide. This mixture is commercially available throughout the world as it is used for welding.

When two CGUs are operated in tandem and operated to their full potential, this system is capable of killing 4–5000 birds per hour. It is important to ensure birds are caught by trained and competent staff and loaded into transport modules at normal stocking densities. All birds must be checked to ensure that they are dead and any that exit the CGU showing signs of life must be killed immediately using a back-up method.

Lethal injection

Birds can be killed in a disease control situation by lethal injection of an approved medicine. This is obviously a humane method which can be used on all poultry species and when administered correctly will induce death smoothly. However, highly trained personnel under the supervision of a veterinary surgeon are required to administer the lethal injection which will limit the use of this option due to availability of staff. The process itself will also be relatively slow as the birds will need to be restrained before the drug is administered.

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Legislation and Publications

Council Regulation (EC) No. 1009/2009
OJ of the EU 2009

The Welfare of Animals at the Time of Killing (England) Regulations 2015
Defra 2015

The Avian Influenza and Influenza of Avian Origin in Mammals (England) Order
Defra 2006

Animal By-Products Regulations (As amended) (Carcase disposal)
Defra 2005

Poultry Welfare - Taking Responsibility training DVD package
HSA 2006

Practical Slaughter of Poultry - A Guide for the Small Producer (2nd Edition)
HSA 2001

Emergency Slaughter DVD
HSA 2004