

Title: INTERIM AMENDMENTS TO WASK IA No: 1306 Lead department or agency: Defra Other departments or agencies:	Impact Assessment (IA)		
	Date: 15/11/2011		
	Stage: Final		
	Source of intervention: Domestic		
	Type of measure: Secondary legislation		
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Summary: Intervention and Options			RPC Opinion: GREEN

Cost of Preferred (or more likely) Option			
Total Net Present Value	Business Net Present Value	Net cost to business per year (EANCB on 2009 prices)	In scope of One-In, Measure qualifies as One-Out?
£19.3m	£19.3m	£1.8m	Yes OUT

What is the problem under consideration? Why is government intervention necessary?

The Welfare of Animals (Slaughter or Killing) Regulations 1995 as amended (WASK) currently prevent the use of gas for on farm culling of poultry and limit the range of gas mixtures that can be used to kill poultry in a slaughterhouse. This is considered to be unnecessarily restrictive in the light of current scientific evidence and the proposed amendments will improve welfare and reduce cost to industry. WASK requires evidence to be laid before a Court within 6 months of an offence. This makes it difficult to prosecute an offence that comes to light some time after it has been committed. Changes can only be made using secondary legislation.

What are the policy objectives and the intended effects?

Provide early access to flexibilities under Regulation 1099/2009 in relation to the use of alternative gas mixtures to stun/kill poultry where compatible with the existing EU regulatory framework under Directive 93/119. Remove current legislative restrictions on the use of gas to cull poultry on farm. Reduce the number of birds shackled alive before stunning/killing and increase availability of on-farm humane culling facilities for mass killing of poultry for situations other than disease control. Reduce burdens on business and increase effectiveness of enforcement arrangements. Ensure offences can be prosecuted up to six months after we become aware of them.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 0 - Do nothing. This would maintain the existing restrictions and limitations in the current legislations. This may impose cost burdens on business that cannot be justified by recent scientific evidence and will force industry to continue using less welfare friendly methods to dispatch large numbers of animals.

Option 1 - Amend WASK to remove both restrictions on the use of gas to cull/slaughter poultry and time limit on prosecutions. The impact of this de-regulatory policy has been measured against two scenarios:

Scenario 1: Measures against the status quo baseline before implementation of Regulation 1099/2009 in 2013. As proposals are more costly than existing methods the only impacts relate to existing users of gas to slaughter poultry who switch to other (cheaper) gas mixtures. Enforcement capabilities will be enhanced.

Scenario 2: The baseline assumes Regulation 1099/2009 is in force in 2013, leading to significant potential cost savings. Enforcement capabilities will also be enhanced.

Will the policy be reviewed? It will/will not be reviewed. If applicable, set review date: Month/Year					
Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	Micro Yes	< 20 Yes	Small Yes	Medium No	Large No
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)			Traded: N/A	Non-traded: N/A	

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.

Signed by the responsible Minister: _____ Date: _____

Summary: Analysis & Evidence

Option 1 Policy Scenario 1

Description: Scenario 1 WASK when Regulation 1099/2009 is not adopted

FULL ECONOMIC ASSESSMENT

Price Base Year 2011	PV Base Year 2011	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low:	High:	Best Estimate: 2.52

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low			
High			
Best Estimate		0.27	2.54

Description and scale of key monetised costs by 'main affected groups'

It is expected that most existing users of Argon CO2 and Nitrogen CO2 will switch to Biphasic CO2. While there is pressure from some retailers to move away from waterbath stunning, those who do not already use these gases are not expected to switch to Biphasic CO2 as it is more costly than the waterbath method currently used. The annual cost of using Biphasic CO2 is £0.27m. For the 75% of producers (by volume) currently using waterbaths there are no costs.

Other key non-monetised costs by 'main affected groups'

Amending the deadline for presenting prosecution cases to the courts may increase the number of prosecutions and generate an associated cost however; this is assumed to be negligible as it would only have affected one case over the last year.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			
High			
Best Estimate		0.67	5.06

Description and scale of key monetised benefits by 'main affected groups'

It is expected existing industry users of Argon CO2 and Nitrogen CO2 will switch to Biphasic CO2. The annual benefit to industry of using Biphasic CO2 is £0.67m. Those who do not already use Argon CO2 are not expected to switch to Biphasic CO2 as it is more costly than the waterbath method currently used. For the 75% of producers (by volume) currently using waterbaths there are no benefits.

Other key non-monetised benefits by 'main affected groups'

Amending the deadline for presenting prosecution cases to the Courts will increase the flexibility and effectiveness of enforcement thus potentially improving animal welfare. On farm gas culling will provide higher culling capability, enabling industry to dispatch birds quicker and with less handling than individual manual methods used now. This will improve welfare and resilience during a disease outbreak. Allowing Biphasic CO2 will increase competitiveness compared with European businesses.

Key assumptions/sensitivities/risks

Discount rate (%) 3.5

The industry costs of using gas for on farm culling and using biphasic CO2 are higher than the waterbath method currently used. We have assumed for illustrative purposes there will be no new uptake of gas stunning as it is more costly than waterbath methods. We have assumed current users of Argon/CO2 will switch to biphasic CO2 as the cost of conversion can be recouped through reduced operating costs in less than one year. Changes have been made post consultation to address welfare concerns

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0.24	Benefits: 0.47	Net: 0.23	Yes	OUT

Summary: Analysis & Evidence

Option 1 Policy Scenario 2

Description: Scenario 2 Amending WASK when Regulation 1099/2009 is adopted

FULL ECONOMIC ASSESSMENT

Price Base Year 2011	PV Base Year 2011	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: 6.1	High:	Best Estimate: 19.3

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low			
High			
Best Estimate	5.0	2.7	25.8

Description and scale of key monetised costs by 'main affected groups'

All costs are incurred by industry. The transition costs consist of purchasing the Containerised Gassing Units (CGU) (£120k), converting from Argon CO2 to Biphasic CO2 (£500k) and converting from waterbath stunning to gas stunning (£4.4m). The average annual costs are the annual operating costs of running the biphasic CO2 stunning system as well as the CGU and Whole House Gassing (WHG) systems for the assumed number and size of culling programmes.

Other key non-monetised costs by 'main affected groups'

Amending the deadline for presenting prosecution cases to the courts may increase the number of prosecutions and generate an associated cost however; this is assumed to be negligible as it would only have affected one case over the last year.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low		3.8	31.9
High			
Best Estimate		5.4	45.1

Description and scale of key monetised benefits by 'main affected groups'

All benefits are incurred by industry. The implementation of Regulation 1099/2009 would impose costly restrictions on the waterbath currents and the frequencies used as well as limiting the number of necking procedures per person per day to 70. In this instance allowing the use of CGU, WHG and biphasic CO2 gas stunning would lead to a considerable average saving in costs of £5.4m per annum. The low estimate reflects the scenario when the UK amendment to Regulation 1099/2009 is accepted.

Other key non-monetised benefits by 'main affected groups'

A switch to gas stunning will improve welfare by removing the need for live shackling and inversion, as recommended by FAWC report; and will reduce the incidence of missed stuns. The ability to use on farm gas culling is likely to be more effective at dealing with a disease outbreak as it does not require the mobilisation of a large workforce. Amending the deadline for presenting prosecution cases to the courts will lead to stricter enforcement, higher compliance levels thus improving welfare

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
Assumed in the central scenario that EU Regulation 1099/2009 will go ahead as planned in 2013. There is a UK proposal to amend the EU Regulation which would reduce production losses from waterbaths and therefore lead to the low benefits level. Key assumptions relate to the number of culling incidents, quantity of birds culled per annum, ability to mobilise short-term labour for culling and production losses associated with new waterbath currents and frequencies. (See annex 2 for assumptions)		

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 2.4	Benefits: 4.2	Net: 1.8	Yes	OUT

Evidence Base

Problem under consideration

Welfare at slaughter or killing is currently subject to the requirements of Directive 93/119 which has been implemented in England by The Welfare of Animals (Slaughter or Killing) Regulations 1995 as amended (WASK).

In 2008 the Commission brought forward proposals to replace Directive 93/119 with a Regulation. The Commission highlighted the need to update Directive 93/119 which has never been amended. As its starting point the Commission took two scientific opinions from the European Food Safety Authority, which suggested revising the technical annexes of the Directive. In parallel, in 2005 the World Organisation for Animal Health adopted two guidelines on the welfare of animals at slaughter and killing leading to similar conclusions. As a consequence the Commission mandated an external consultant in 2006 to carry out a study on stunning/killing practices in slaughterhouses and their economic, social and environmental consequences. The study was finalised in 2007. At the same time the Commission conducted consultations of interested parties and Member States. In 2006 the Commission adopted the first Community Action Plan on the Protection and Welfare of Animals, introducing new concepts such as the welfare indicators and the need for further research programs and centres of reference on animal welfare. Specific problems have also been identified with the present EU legislation such as the lack of harmonised methodology for new stunning methods, the lack of clear responsibilities for operators on animal welfare, the insufficient competence of personnel handling animals, or insufficient conditions for the welfare of animals during killing for disease control purposes.

In proposing a Regulation the Commission's general objectives were to improve the protection of animals at the time of slaughter or killing, while ensuring a level playing field for all business operators concerned, so that their competitiveness is not affected by discrepancies in their costs of production or their market access. The Commission considered that this should contribute to Better regulation/simplification policy objectives. The Commission's specific objectives are to encourage innovation for stunning animals humanely, to ensure better integration of animal welfare in the production process of slaughterhouses, to increase the level of knowledge of personnel concerned and to improve the protection of animals when large scale killing for disease control purposes occurs.

Regulation 1099/2009 on the protection of animals at killing was agreed in 2009 and comes into effect on 1 January 2013 (some measures in relation to layout, construction and equipment in slaughterhouses do not come into effect until December 2019 for existing slaughterhouses). The Regulation will be directly applicable in all member states including the UK. In addition to its basic provisions the Regulation allows member States to adopt national rules to maintain existing welfare protection where this offers a higher standard of protection than the minimum standards in Regulation 1099/2009. In addition Regulation 1099 allows national rules to be used to introduce new welfare protection in relation to religious slaughter, farmed game and killing outside a slaughterhouse.

Directive 93/119 and WASK will be repealed when Regulation 1099/2009 comes into effect on 1 January 2013. No decisions have been made on the use of national rules although Ministers have confirmed they wish to see existing welfare standards maintained whilst relaxing existing legislative provisions where this can be done without reducing welfare standards. However, the industry is pressing for a number of interim changes to be made to WASK to reduce regulatory burdens and inform investment decisions in the run up to January 2013. The industry request was discussed at a workshop in March 2010. This led to an exchange of letters with representative bodies and a follow up meeting in June 2010. This process culminated in an exchange of letters between Ministers and industry bodies in September 2010. The changes requested will help ensure a smooth transition to the new arrangements and are **de-regulatory**.

It is anticipated that legislation implementing Regulation 1099/2009 will be made in 2012. This will require a rigorous review of the current legislative framework to ensure compliance with Regulation 1099/2009 and to ensure that existing welfare standards are maintained in a manner that is effective whilst placing the minimum necessary legislative burdens on industry. Work on this, including discussions with key stakeholders is ongoing. Ministers have therefore decided to await the outcome of this work before proposing further changes to the current regulatory framework. **For this reason the options considered in this Impact Assessment have been kept to the minimum necessary to**

provide the certainty required by industry in relation to those areas of activity where significant long term investment decisions are involved.

The changes proposed are consistent with the requirements of Directive 93/119 on the protection of animals at the time of slaughter or killing and Regulation 1099/2009 which will replace it from 1 January 2013.

Consultation

The changes proposed respond to industry pressure for early access to the flexibilities Regulation 1099/2009 will introduce in relation to the use of gas to slaughter poultry. They also respond to industry concerns about a lack of flexibility in the current legislative framework in relation to the use of gas to cull birds on farm.

Use of biphasic carbon dioxide in slaughterhouses - There was general support for the amendment on the grounds that it would help facilitate a move from electric waterbath stunning of poultry and reduce the need to handle and shackle live birds before slaughter. Egg and poultry industry representatives strongly supported the proposed change. Enforcement and veterinary interests also supported this view. Welfare and Parliamentary interests expressed concern about the proposed biphasic carbon dioxide gas mixture on the grounds that carbon dioxide is aversive to birds and can cause respiratory distress. They suggested that this should be addressed by lowering the proportion of CO₂ in the phase 1 gas mixture or mixing CO₂ with Oxygen and Nitrogen in a “hyperoxygenated” gas mixture will improve welfare. They have therefore urged a cautious approach to the switch to CO₂, suggesting we should only allow the use of biphasic Co₂ if Co₂ levels in the phase 1 mixture do not exceed 30% if mixed with air, or 40% where a hyperoxygenated gas mixture is used. It was also suggested aversiveness could be reduced by progressively increasing the carbon dioxide gas concentration and not exposing birds directly to a gas mixture containing 30% or more carbon dioxide. A gas supplier commented on the cost comparisons used in the Impact Assessment and suggested that when comparing the cost of gas mixtures Nitrogen / Co₂ not Argon / Co₂ should be used as this is more representative of current industry practice. One organisation expressed concern about any legislative proposal limiting access to the full range of flexibilities provided by Regulation 1099/2009 when it comes into effect on 1 January 2013.

Range of birds killed on farm using gas - Welfare organisations and Parliamentary interests were broadly supportive of the change proposed. However they wished to see gas used to kill birds on farm only as a last resort where other more humane methods are not viable. They also saw a need for strict control and planning where gas killing is used. Other respondents supported the proposed change although one organisation again expressed concern about any legislative proposal limiting access to the full range of flexibilities provided by Regulation 1099/2009 when it comes into effect on 1 January 2013.

Extending the time limit for prosecutions - Eleven of the responses fully supported the change proposed. One industry organisation commented that of the revised approach should be implemented in a proportionate manner.

In the light of the responses received the Department plans to implement its proposal to increase the range of birds that can be killed on farm using gas and extend the time limit for prosecutions as proposed. So far as the use of biphasic carbon dioxide in slaughterhouses is concerned the Department considers that a change in permitted gas mixtures will help promote the switch from electric waterbath stunning to gas stunning. This has an inherent welfare benefit as it reduces the need for live handling and shackling of bird and will eliminate welfare risks from pre stun shocks and missed stuns often associated with electric waterbath stunning. However the Department acknowledges the concerns expressed about bird welfare associated with the use of higher levels of carbon dioxide in air during phase 1 of the stunning / killing cycle. In the light of these comments we do see merit in allowing the use of hyperoxygenated gas mixtures and in view of this we will adopt a modified approach to the interim gas mixture changes proposed which removes the requirement for Co₂ to be mixed with atmospheric air. The department also acknowledges the comments on gas mixture costs and has reflected this in the final Impact Assessment.

Gas killing of poultry in slaughterhouses

At slaughterhouses there are currently two main methods used to slaughter poultry; electric waterbath stunning followed by a neck cut whilst the bird remains unconscious and gas killing using inert gas mixtures. Some 800 million birds are slaughtered annually in the UK with about 600 million slaughtered using electric waterbath stunning and some 200 million are slaughtered using gas. In high throughput slaughterhouses over 10,000 birds are killed in an hour. Waterbath stunning involves live shackling and inversion of birds (birds are suspended upside down with their legs held in metal shackles). The 2009 Farm Animal Welfare Council report on the welfare of white meat animals at slaughter looked at waterbath stunning and expressed concern about painful shackling, and inversion. They also raised concerns about missed stuns, pre stun electric shocks (where wing tips enter the waterbath before the head) and possible electro immobilisation (high frequency electrical currents are less effective at inducing full unconsciousness than lower frequency currents but cause less carcass damage). The use of gas systems avoids the need for live shackling and eliminates welfare concerns associated with electrical stunning.

WASK currently imposes strict limitations on the use of gas to stun/kill poultry. In a slaughterhouse inert gas (Argon or Nitrogen) mixtures must be used. Directive 93/119 and Regulation 1099/2009 permit access to a wider range of gases including biphasic carbon dioxide (CO₂). There is considerable pressure from the supermarkets on welfare and quality grounds for poultry producers to move from live shackling and electrical waterbath stunning to gas stunning. The Farm Animal Welfare Council (FAWC) supports this approach. We understand from discussions with representatives of the poultry industry some supermarkets would like to see this change take place over the next 12 – 18 months. Some plant operators have indicated their willingness to change from electrical to gas stunning but, switching to gas stunning requires a large capital outlay. To inform capital investment decisions poultry food business operators are pressing for clarity on the gas mixtures that will be permitted in the UK following implementation of Regulation 1099/2009.

When implementing Regulation 1099/2009 Member States have the ability to maintain existing welfare protection where this is better than the minimum standards set out in Regulation 1099/2009. Poultry producers cannot therefore assume they will automatically have access to all the gas mixtures permitted under Regulation 1099/2009 when it comes into effect in 2013.

The use of CO₂, as opposed to inert gas mixtures, would reduce running costs for any plant using or planning to use a gas killing system. Carbon dioxide is known to be aversive in high concentrations and is a potential respiratory stimulant that can cause gasping, however it has also anaesthetic effects. Literature has demonstrated that anoxic gas mixtures with CO₂ concentrations of <30% are humane methods to render birds unconscious. Later research has reported that hypercapnic hyperoxygenated gas mixtures (those containing CO₂) are linked to strong respiratory responses (gasping) but evidence for pain and aversiveness at low to intermediate CO₂ concentrations (<30-40%) is limited. Further literature reported that anoxic gas mixtures induce unconsciousness faster, however they are linked to an early onset of prolonged wing flapping and sustained tonic convulsions in the period where birds might not have lost consciousness. The most recent papers report that the smoother transition to unconsciousness produced by hypercapnic hyperoxygenated gas mixtures is preferred to the fast induction and convulsions associated with anoxic mixtures.

Literature reports that gas mixtures of 30%CO₂, 40%O₂, 30%N₂ and 40%CO₂, 30% O₂ and 30% N₂ render birds unconscious within 1 minute, before a killing gas mixture containing 80%CO₂ in air or 80% CO₂, 5% O₂, 15% N₂ is applied. As biphasic CO₂ cannot be used in poultry slaughterhouses at present an interim de-regulatory change to WASK is required to facilitate the transition to new gas mixtures, to inform investment decisions and, in some cases, allow plant modifications to commence before 1 January 2013. The main justification for this is that gas stunning removes the need for inversion, live shackling and the risk of pre-stun shocks and inappropriate currents being applied to birds. Several papers and a FAWC report on the welfare of farmed animals at slaughter or killing have been published since WASK gas mixtures was last reviewed bringing forward new evidence which states that biphasic CO₂ gas mixtures as reported above are seen to be a humane method of stunning poultry. These sources also confirm gas killing methods address some of the major concerns associated with other stunning methods.

References

Remote monitoring of electroencephalogram, electrocardiogram and behaviour during controlled atmosphere stunning in broilers: Implications for welfare, A.M.L Coenen, J.C.Lowe and D.E.F.McKeegan, Poultry Science 88, 10 – 19, 2009.

Physiological and behavioural responses of broiler chickens to controlled atmosphere stunning – implications for welfare, D.E.F. McKeegan, J.K. McIntyre, T.G.M. Demmers, J.C. Lowe, C.M. Wathes, P.L.C. van den Broek, A.M.L. Coenen, and M.J. Gentle, Animal welfare, 16, 409 – 426, 2007.

Controlled atmosphere stunning of broiler chickens: Effects on behaviour, physiology and meat quality in a pilot scale system at a processing plant, S.M. Abeyesinghe, D.E.F. McKeegan, M.A. McLerman, J.C. Lowe, T.G.M. Demmers, R.P. White, R.W. Kranen, H. Van Bommel, J.A.C. Lankhaar, and C.M. Wathes, British Poultry Science, 48, 4, 406 – 423, 2007.

Changes in the somatosensory evoked potentials and spontaneous electroencephalogram of hens during stunning with a carbon dioxide and argon mixture. A.D. Mohan Raj, S.B. Wotton and N.G. Gregory; Department of Meat animal science, School of Veterinary Science, University of Bristol, Langford, BS18 7DY, UK. Accepted 4 July 1991. Available on line 20 November 2006.

Controlled atmosphere stunning of broiler chickens. II. Effects on behaviour, physiology and meat quality in a commercial processing plant, D.E.F. McKeegan, S.M. Abeyesinghe, M.A. McLerman, J.C. Lowe, T.G.M. Demmers, R.P. White, R.W. Kranen, H. van Bommel, J.A.C. Lankhaar, and C.M. Wathes, British Poultry Science, 48, 4, 430-442, 2007.

Note: This list provides details of key references only and is not a complete list of all references relevant to this topic

On farm culling of large numbers of poultry

Large numbers of birds will sometimes need to be culled on farm for a number of different reasons e.g. to deal with a disease outbreak, natural emergencies (e.g. flooding), etc. At present the only legal culling methods, for flocks that have not reached laying age, are free bullet, electrocution, decapitation, lethal injection, neck dislocation; it is also lawful to stun the animal using a captive bolt, concussion or electronarcosis followed by one of the killing methods mentioned previously or bleeding (ensuring the animal does not recover consciousness through the process). Manual neck dislocation is the most commonly used on farm killing method for poultry. This requires individual live bird catching and handling. It is time consuming, requires additional labour and can be expensive. None of the permitted killing methods are well suited for culling of large numbers of birds operations.

On farm, the use of gas is currently limited by WASK to killing end of life breeder and end of lay hens or birds affected by movement restrictions e.g. during a disease outbreak. These arrangements were introduced in 2007 although to date, little use has been made of existing permitted on farm gas killing methods. While not all the Salmonella national control plans require infected birds to be culled, birds other than breeders might need to be culled (e.g. if there is a problem finding a slaughterhouse which will kill infected birds or, in the case of laying hens, it can be uneconomic to rear affected flocks as the eggs produced can only be sold for processing).

When Regulation 1099/2009 comes into effect neck dislocation will be limited to 70 birds per person per day. This will make neck dislocation even less suitable for culling of large numbers of birds. The industry is keen to have access to other novel humane methods of culling large numbers of poultry and has indicated in discussions that they are willing to invest in on farm gas culling equipment. This is of potential benefit to the department as it will increase on farm culling capabilities in the event of a disease outbreak. An interim de-regulatory amendment to WASK will be consistent with Regulation 1099/2009, will improve welfare and will improve speed and flexibility for dealing with disease outbreaks.

The cumulative effect of the proposals on gas stunning and on farm use of gas for culling is deregulatory as they reduce the limitations placed on businesses by the existing domestic legislation on the welfare of animals at slaughter or killing. These limitations are no longer considered necessary to ensure the protection of welfare and can therefore be removed. The changes proposed are also consistent with both the current and future EU regulatory framework and the existing limitations cannot be justified as necessary to implement EU requirements.

Prosecution time limits

At present a prosecution for a welfare offence under WASK must be brought within six months of the offence being committed. This has recently compromised our ability to prosecute a potentially serious offence, where this situation was brought to our attention by a third party some time after the alleged offence took place. In view of this we would propose an interim change to WASK to allow prosecutions to be brought up to six months after we become aware of the alleged offence. This would bring WASK into line with enforcement of legislation in other areas, such as the Animal Welfare Act 2006. Enforcement of

WASK in slaughterhouses is undertaken by the Food Standards Agency acting on behalf of the Secretary of State. FSA do not operate a risk based model and are not therefore considered to be a Hampton compliant enforcement body.

Rationale for intervention

Changes to WASK require secondary legislation and cannot be made without Government intervention. Government intervention is necessary to allow early access to some of the flexibilities available under Regulation 1099 / 2009 in relation to the use of gas to kill poultry at slaughterhouses. This intervention will also improve welfare of poultry on farm by providing access to alternative humane culling of large numbers of birds methods to enable industry to deal with culling of large number of birds.

Policy objective

We are seeking to reduce regulatory burdens and to provide early access to some of the flexibilities available under Regulation 1099/2009 where compatible with the existing EU regulatory framework under Directive 93/119. We are also seeking to improve welfare during slaughter or killing of poultry by removing barriers to the adoption of gas killing as an alternative to waterbath stunning as recommended by the farm Animal Welfare Council and others. We wish to remove current legislative restrictions on the use of gas to cull poultry on farm in order to improve welfare associated with culling of large numbers of birds on farm and increase flexibility for dealing with disease outbreaks. We plan to reduce burdens on business and increase effectiveness of enforcement arrangements, where consistent with maintaining good welfare standards during slaughter or killing. Finally we are seeking to increase flexibility in relation to prosecution of welfare offences by ensuring offences can be prosecuted up to six months after we become aware of them.

Options considered

This impact assessment considers one option in addition to the “Do Nothing” option however, it measures the impact of this option in two scenarios. In both scenarios the policy remains the same however, the baseline against which the policy is appraised changes. This is a slightly unusual approach as ordinarily we would only measure the impact against a status quo baseline; however with the likely adoption of Regulation 1099/2009 in 2013 and its rather large affect on the results it was decided that for illustrative purposes two scenarios would be presented: one in which Regulation 1099/2009 is not in place and one where it is. The table below summarises the approach taken:

Option & Scenario	Policy	Baseline
Option 1, Scenario 1	Amend WASK immediately	Regulation 1099/2009 not in place
Option 1, Scenario 2	Amend WASK immediately	Regulation 1099/2009 in place

Option 1 Scenario 2 is considered to be the most likely option.

The introduction of Regulation 1099/2009 as planned on 1 January 2013 is likely to make some existing poultry slaughter and culling methods significantly more costly. This will make the methods proposed in the amendments to WASK cost effective. The regulation plans to restrict the number of birds which can be killed using neck dislocation to 70 per person per day. It also proposes to introduce new stunning currents and frequencies in an attempt to improve animal welfare associated with the use of waterbaths which will significantly increase production losses. We have written to the Commission questioning some of the waterbath currents and frequencies proposed. As currently drafted Table 2 in Chapter II of Annex I to Regulation 1099/2009 does not specify the wave form to be used. Research evidence shows that different parameters are required to achieve appropriate stun when using AC or DC wave forms. The values currently specified in Table 2 broadly correlate with research findings in relation to AC currents and to ensure appropriate welfare standards are maintained, it is important to ensure the parameters set out in Regulation 1099 / 2009 are clearly related to AC currents and a separate table or requirements for any alternative currents are included if necessary. In addition we would wish to see two further changes made to Table 2 to reflect research published since EFSA last considered this issue:

- The mid range frequency band should cover 200 to 600 hz not 200 – 400 hz as currently drafted.
- The high range frequency band should cover 600 – 800 hz and should not extend to 1500 hz as currently drafted.

Our letter is currently being considered by EFSA.

To reflect the differing impact of the measures dependent on the implementation of Regulation 1099/2009 we have measured the impacts against two baselines. The first baseline (Scenario 1) considers the impact against the current domestic statutory framework as would be the case in the unlikely event that Regulation 1099/2009 has not been implemented. The second baseline (Scenario 2) considers the impacts on the basis that Regulation 1099/2009 is implemented without the use of national rules to maintain existing limitations in WASK on the use of gas mixtures to slaughter poultry. By establishing two baselines we can show that the impact of this policy is far greater when Regulation 1099/2009 is implemented relative to the scenario when it isn't.

Option 0 - Do nothing. This would maintain the existing restrictions and limitations of the current legislation. This imposes additional restrictions on business that cannot be justified in the light of recent scientific evidence and are not necessary to implement existing or future EU requirements. It will also delay introduction of gas killing technology as an alternative to electric waterbath stunning which could impact adversely on welfare and product quality. Maintaining existing restrictions to on-farm culling of large numbers of birds techniques could impact adversely on welfare, reduce industry flexibility, increase costs to business and hamper our ability to contain a widespread disease outbreak.

Option 1 - Amend WASK immediately to remove restrictions on the use of gas to cull / slaughter poultry and remove time limit on prosecutions.

Scenario 1: This scenario uses the existing regulatory framework as a baseline i.e. a baseline where Regulation 1099/2009 is **not in place** in 2013.

Scenario 2: This scenario uses a baseline where Regulation 1099/2009 **is implemented** from 1 January 2013.

Costs and benefits of each option

Option 0 – Do nothing

On farm culling

If we do nothing the only legal culling methods, for flocks that have not reached laying age, are free bullet, electrocution, decapitation, lethal injection, neck dislocation; it is also lawful to stun the animal using a captive bolt, concussion or electronarcosis followed by one of the killing methods mentioned previously or bleeding (ensuring the animal does not recover consciousness through the process). In practice neck dislocation is the main killing method routinely used in such situations. Based on historic Defra information it is estimated culling will be required 6 times per year and we assume that 125,000 birds need to be culled per annum. The unit cost of culling using neck dislocation is approximately £0.07 per bird making the total estimated cost per annum of the existing method of culling £8,750 (see Annex 2).

Gas slaughter / killing

If no change is made the only option available in the UK for producers who decide they wish to switch from electric waterbath stunning to gas will be to use Argon /Co2 which involves higher operating costs than biphasic CO2 methods. The average operating cost of waterbath stunning per 1,000 birds is estimated to be £0.22 (see Annex 2). 11 plants with a total throughput of approximately 236 million birds per annum are thought to be considering switching to CAS. The current cost to those 11 plants of waterbath stunning is estimated to be some £52,000 per annum. Under current arrangements UK producers using CAS are operating at a competitive disadvantage to operators in other parts of Europe where biphasic Co2 is already permitted.

Option 1 – Scenario 1

This scenario measures the costs and benefits of allowing the proposed on farm gas culling and biphasic CO2 against a baseline where Regulation 1099/2009 **is not** implemented.

Costs and benefits

On farm culling

This amendment will extend the use of on farm gas killing (e.g. using Containerised Gassing Units (CGUs) or Whole House Gassing (WHG)) to cull birds on farm that have not reached laying age or end of life as breeder hens. While not all the Salmonella national control plans require Salmonella positive birds to be culled, Salmonella positive flocks might still need to be culled (e.g. if there is a problem finding a slaughterhouse which will kill Salmonella positive birds or, in the case of laying hens, it can be uneconomic to rear affected flocks as the eggs produced can only be sold for processing). This potentially involves up to 6 culling incidents per year and it has been assumed (based on historic culling patterns) that 125,000 birds per annum will need to be culled.

Using a CGU unit incurs 4 main costs: Transportation costs (where there is no CGU on site), catching and loading / unloading the animals, gas cost and the requirement for veterinary supervision. Necking incurs 2 main costs: wage costs for those necking the animals and the cost of lost production as culling 125,000 birds using necking takes 2 days longer than culling using CGU. The table below presents the costs (based on the average cost for broilers and layers) of 6 incidents involving culling 125,000 birds per annum using the existing necking method relative to the CGU method. It shows that the cost of CGU is greater than the cost of necking therefore it is **unlikely that there would be any significant additional uptake of CGU method based on this economic analysis**. However amending the legislation will ensure those companies keen to improve animal welfare at the time of culling, or unable to find relevant workforce for a prompt kill to prevent suffering or spread of disease would have the choice. In any case uptake would be voluntary. Further, the CGU method requires capital expenditure, unless a third party offers a CGU service (we are aware that one company is now interested in developing this approach and is arranging for personnel to be licenced to operate CGUs commercially). Two CGU's would be required for each culling incident at a cost of £4,000 each. This capital expenditure has not been included here and would make the CGU method even less attractive to industry.

Table 1: Comparing the cost of necking versus cost of CGU culling

Description	Unit Cost (£)	Unit	Total Cost (£)
CGU			
Transport to site	500	per incident	3,000
Catching and loading	0.00875	per bird	1,094
Gas cost	0.0667	per bird	8,334
Veterinary supervision	0.0211	per bird	2,642
Total CGU cost			15,070
Necking unit wage cost	0.07	per bird	8,820
Cost of lost production			2,100
Total Necking Cost			10,920
Additional CGU cost			4,150

Notes: See Annex 2 for further details of calculations and data sources
Numbers may not add/multiply in table due to rounding

Using WHG incurs 3 main costs: Providing the WHG service, veterinary supervision costs and shed clearance costs. Necking incurs 2 main costs: wage costs for those necking the animals and the cost of lost production as culling 125,000 birds using necking takes 2 days longer than culling using WHG. The table below presents the costs (based on the average cost for broilers and layers) of 6 culling incidents involving a total of 125,000 birds per annum using the existing necking method relative to the WHG method. It shows that the cost of WHG is greater than the cost of necking therefore it is **unlikely that there would be any additional uptake of WHG methods**. However the use of WHG does have wider benefits in that it will remove health and safety risks associated with staff entering a poultry house to catch live birds. In any case any uptake would be voluntary.

Table 2: Comparing the cost of necking versus cost of WHG culling

Description	Unit Cost (£)	Unit	Total Cost (£)
WHG			
Service cost	7,500	per house	45,000
Veterinary supervision	0.0211	per bird	2,642
Clearance	0.00875	per bird	1,094
Total CGU cost			48,736
Necking unit wage cost	0.07	per bird	8,820
Cost of lost production			2,100
Total Necking Cost			10,920
Additional CGU cost			37,816

Note: See Annex 2 for further details of calculations and data sources
Numbers may not add/multiply in table due to rounding

There is no specific economic incentive for industry to introduce WHG and CGU culling as it is more costly than the current necking method. In light of this, industry is likely to continue to use necking and no additional costs will be incurred by allowing CGU and WHG.

While there is little economic incentive for the uptake of CGU or WHG assuming an adequate supply of labour to undertake necking, gas killing methods are likely to be a more welfare friendly and efficient method of culling or dealing with a disease outbreak as unlike necking they do not require the mobilisation of a large workforce. Further, there is evidence to suggest these methods are better from a welfare perspective than the manual alternatives as they are not susceptible to operator fatigue and lack of operator skill. These concerns have led to an EU decision to limit manual necking to 70 birds per person per day (see scenario 2).

Gas slaughter / killing

This amendment will allow the use of biphasic CO₂ for slaughter, as permitted under regulation 1099 / 2009 and Directive 93/119. Currently in the UK only Argon/CO₂ or Nitrogen/CO₂ is permitted for gas slaughter. Current scientific advice indicates Argon / CO₂ or Nitrogen/ CO₂ have no significant welfare benefits compared with the use of Biphasic CO₂.

Some 800 million birds are slaughtered annually in the UK. At present it is estimated that some 25% (200 million birds) are slaughtered using anoxic gas mixtures (i.e. using Argon /CO₂ or Nitrogen/CO₂ gas mixtures). The use of gas is particularly suited to situations where a high quality product is required as would be the case where fresh breast fillets are produced for sale rather than the sale of whole birds where carcass damage from electrical stunning is less readily apparent. Almost all the remaining 600 million birds will be stunned using electric waterbath stunning equipment. The expense of Argon/CO₂ means that there is no economic incentive to prefer its use over waterbaths. Post consultation we have established that there is already a shift away from Argon/CO₂ gas mixtures to cheaper Nitrogen/CO₂ gas mixtures. The comparative cost of both gas mixtures are shown in table 3 below assuming that 20% of birds are killed using Argon/CO₂ and 80% using Nitrogen/CO₂.

Table 3: Comparing the cost of Argon/CO₂ and biphasic CO₂

Description	Unit Cost (£)	Total Cost (£)

Argon/CO2 operating cost /bird	0.008	332,800
Nitrogen/CO2 operating cost /bird	0.002	332,800
Biphasic CO2 operating cost per bird	0.001	208,000
Biphasic CO2 operating cost saving vs Ar/CO2		291,200
Biphasic CO2 operating cost saving vs N/CO2		166,400
Conversion cost per plant	100,000	500,000

The table above shows that Biphasic CO₂ is significantly cheaper than the current allowable gas Argon/CO₂. While there is a large conversion cost and associated capital cost this is more than outweighed by the operating cost saving. The use of Biphasic CO₂ is currently illegal under WASK. However, from discussions with industry representatives we know some of the plants currently using inert gas mixtures are considering a switch to Biphasic CO₂ when it becomes legal to do so. We therefore assume that those operators currently using Argon CO₂ will switch to Biphasic CO₂ when permitted. The table below illustrates the NPV of producers using Biphasic CO₂ rather than Argon CO₂.

Table 4: Saving for existing users of Argon CO₂ of switching to Biphasic CO₂ (£'000)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Ar/ CO2 – operating expense saved (= benefit)	(1 plant)	333	333	333	333	333	333	333	333	333	2,995
Conversion to Biphasic CO2											
Capital cost/charge	100	12	12	12	12	12	12	12	12	12	208
Operating cost		42	42	42	42	42	42	42	42	42	374
Cost	100	54	54	54	54	54	54	54	54	54	582
Net Benefit	-100	279	279	279	279	279	279	279	279	279	2,413
N/CO2 Operating expense saved (=benefit)	(4 plants)	333	333	333	333	333	333	333	333	333	2,995
Conversion to Biphasic CO2											
Capital cost/charge	400	48	48	48	48	48	48	48	48	48	832
Operating cost		166	166	166	166	166	166	166	166	166	1,498
Cost	400	214	214	214	214	214	214	214	214	214	2,330
Net Benefit	-400	119	119	119	119	119	119	119	119	119	665
Total											
Benefit		666	666	666	666	666	666	666	666	666	5,990
Present Value		643	621	600	580	560	541	523	505	488	5,064
Cost	500	268	268	268	268	268	268	268	268	268	2,912
Present Value	500	259	250	241	234	226	218	211	204	197	2,539
Net Benefit	-500	398	398	398	398	398	398	398	398	398	3,078
Present Value	-500	384	371	359	346	335	323	313	302	292	2,525

Note: See Annex 2 for further details of calculations and data sources
Numbers may not add due to rounding

The benefit of moving to Biphasic CO₂ is equal to the costs forgone i.e. the cost of operating the previous Argon CO₂ or Nitrogen CO₂ system, while the cost of moving to Biphasic CO₂ is equal to the cost of operating the new Biphasic CO₂ plants. This means that the net value is equal to the cost of operating the Argon CO₂ and Nitrogen CO₂ plants (present value of £5.06m over 10 years) less the cost of the Biphasic CO₂ plant (£2.5m) and this is shown in table 4 above; these are the results presented in the summary pages.

Nevertheless it is still not cost effective relative to the current waterbath method; even when the significant capital costs are omitted. The table below compares the cost of waterbath slaughter versus biphasic CO₂.

Table 5: Comparing the cost of Waterbath and biphasic CO₂

Description	Unit Cost (£)	Unit	Total Cost (£)
Waterbath			
Operating cost	0.0002	per bird	51,909
Labour cost	0.0041	per bird	971,559
Total waterbath cost			1,023,468
Biphasic CO ₂			
Operating cost	0.001	per bird	235,950
Labour cost	0.0035	per bird	825,825
Total biphasic CO ₂ cost			1,061,775
Additional CO ₂ cost			38,307

Note: See Annex 2 for further details of calculations and data sources
Numbers may not add/multiply in table due to rounding

There is no economic incentive for industry users of waterbaths to introduce biphasic CO₂ slaughter as it is more costly than the current waterbath method and in any case uptake will be voluntary. In light of this, we have assumed industry will continue to use waterbaths and no additional costs will be incurred by allowing biphasic CO₂.

The additional costs to industry of implementing biphasic CO₂ slaughter means that we have assumed there to be no uptake of this method as an alternative to waterbath stunning. However there would be an economic benefit to the use of biphasic CO₂ for those plants currently using Argon/CO₂ mixtures. There is a significant unquantifiable welfare benefit if biphasic CO₂ is used in preference to waterbath stunning as there will no longer be any need for live shackling and it will reduce the incidence of missed stuns. To inform capital investment decisions poultry business operators are pressing for clarity on the gas mixtures that will be permitted in the UK, implementing this policy would provide the clarity required.

Option 1 – Scenario 2

This scenario measures the costs and benefits of allowing on farm gas culling and biphasic CO₂ against a baseline where Regulation 1099/2009 has been implemented on 1st January 2013. This Regulation will increase costs associated with waterbath stunning and the use of neck dislocation for culling purposes. We have therefore assumed that where the changes to the legislation proposed reduce costs there is uptake of these alternative methods.

Costs

On farm culling

We assume there are 6 culling incidents per year affecting 125,000 birds and it is unknown which method industry will prefer (CGU or WHG) as certain chicken houses are unsuitable for WHG. It is therefore assumed that 3 incidents will use CGU and 3 will use WHG.

Two CGU's would be required for each culling incident at a capital cost of £4,000 each. If industry trade associations can establish a "sharing" scheme it is estimated 30 CGUs would be needed to make such a

scheme viable at a total cost to the industry of some £120,000. CGUs would have an estimated design life of some 10 years so would need to be replaced 10 years after purchase. It has been assumed that the cost of capital associated with this investment is 12% per annum, which reflects a commercial cost of capital. We are aware that one supplier is considering offering a CGU service which would remove the capital cost element. There is no capital cost associated with using WHG as a “bought in” service is available for industry to use.

Using a WHG incurs 3 main costs: Delivery of the WHG service, veterinary supervision costs and clearance costs. Using a CGU incurs 4 costs: Transportation costs (where no on site facility is available), catching and loading/unloading the animals, gas cost and the requirement for veterinary supervision. The table below illustrates the costs associated with using WHG and CGU methods for culling over a 10 year period:

Table 6: Costs of using WHG and CGU for culling

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>WHG</i>										
WHG service cost		22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500	22,500
Veterinary supervision		1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321
Clearance		547	547	547	547	547	547	547	547	547
Total		24,368	24,368	24,368	24,368	24,368	24,368	24,368	24,368	24,368
<i>CGU</i>										
Equipment	120,000									
Cost of capital		14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400
Transport to site		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Catching and loading		547	547	547	547	547	547	547	547	547
Gas cost		4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167	4,167
Vet supervision		1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321
Total	120,000	21,935	21,935	21,935	21,935	21,935	21,935	21,935	21,935	21,935
Total	120,000	46,303	46,303	46,303	46,303	46,303	46,303	46,303	46,303	46,303
PV	120,000	44,737	43,225	41,763	40,351	38,986	37,668	36,394	35,163	33,974

Note: See Annex 2 for further details of calculations and data sources

Numbers may not add due to rounding

The figures in this table don't reconcile with tables 1 and 2 as these figures assume that 3 incidents are dealt with using WHG and 3 incidents use CGU.

In contrast Tables 1 and 2 assume that there are 6 incidents for WHG and 6 incidents for CGU.

Gas slaughter killing

It is estimated that the capital cost of converting from Waterbath stunning to gas stunning is some £400,000 per plant and that plants have a 15 year life expectancy. In addition to the 5 plants already using Argon CO₂ and Nitrogen CO₂ some 11 plants with a total throughput of approximately 236 million birds per annum, comprising 28% of total production are judged to be considering this switch at a potential total capital cost of £4.4m. From discussions with industry it is believed that these 11 plants are awaiting clarification regarding changes to WASK before they invest in gas slaughter methods; it has therefore been assumed that these plants will switch once changes to WASK are implemented. The labour costs incurred are based on a productivity level of 2,000 dead birds hung per hour with an average hourly wage of £7 while the non-labour operating costs equal £1 to slaughter 1,000 birds. It has been assumed that industry will adopt this method a year prior to the introduction of Regulation 1099/2009 as they will require a period of 'bedding in'. The table below presents the Present Value of the costs incurred with gas slaughter killing over the 10 year appraisal period.

Table 7: Costs of gas slaughter killing using biphasic CO₂

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Gas slaughter – new</i>										
Capital Costs	4,400,000									
Cost of capital		528,000	528,000	528,000	528,000	528,000	528,000	528,000	528,000	528,000
Labour Costs		825.825	825.825	825.825	825.825	825.825	825.825	825.825	825.825	825.825
Operating		235,950	235,950	235,950	235,950	235,950	235,950	235,950	235,950	235,950

costs										
Gas slaughter – conversion										
Capital Costs	500,000									
Cost of capital		60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Operating Costs		208,000	208,000	208,000	208,000	208,000	208,000	208,000	208,000	208,000
Labour Costs		825,825	825,825	825,825	825,825	825,825	825,825	825,825	825,825	825,825
Total	4,900,000	2,683,600	2,683,600	2,683,600	2,683,600	2,683,600	2,683,600	2,683,600	2,683,600	2,683,600
PV	4,900,000	2,592,850	2,505,169	2,420,453	2,338,602	2,259,519	2,183,110	2,109,285	2,037,957	1,969,040

Note: See Annex 2 for details of calculations and data sources

Numbers may not add due to rounding

Benefits

The monetised benefits of implementing these measures are equal to the costs of the existing methods they will replace i.e. waterbath stunning for slaughter and necking for culling. The implementation of Regulation 1099/2009 in 2013 significantly increases the costs of the existing methods by introducing new restrictions on current and frequency for waterbaths and limitations on the number of birds necked per day by one person.

Under Regulation 1099/2009 necking will be restricted to 70 birds per person per day relative to an unregulated necking rate of 700 birds per day. These necking restrictions lead to a tenfold reduction in the productivity per day per individual worker meaning that either a large increase in the necking labour force is required or it will take a considerably longer period of time to cull the birds. During a culling period broiler houses will be prohibited from re-stocking their livestock, increasing the time taken to cull will therefore lead to increased idle time for houses which will have a significant cost under Regulation 1099/2009.

The culling of birds is usually carried out by short-term casual labour working in gangs, one necking gang ordinarily consists of 5 people. Under the status quo regulations most culling incidents only require one necking gang as one gang can neck 3,500 birds per day. This will fall to 350 birds per gang once Regulation 1099/2009 comes into effect. It is inconceivable that rural farms will have easy access to large volumes of short-term casual labour willing to work 1-2 hours per day therefore a significant additional mobilisation of the labour force in response to a culling incident is unlikely. It has therefore been assumed that 3 gangs can be mobilised at any one time with a maximum culling capacity of 1050 birds per day.

Assuming that 125,000 birds need to be culled over a year, under the previous regulations (with 3 gangs working a 7 hour day) culling would have taken a total of 12 days. The new regulations lead to a culling time of 119 days using 3 gangs, an increase in culling time of 107 days. This is 107 extra days in which the bird houses requiring culling will be inactive. If 125,000 birds are culled per annum over 6 culling incidents the average culling incident consists of 20,833 birds. So for 107 days per annum broiler houses will lose the productivity of approximately 20,000 birds.

The average 2010 wholesale price of a medium egg was £0.0525 (Defra Commodity Price Statistics) and birds generally produce one egg per day, so the daily production of a bird is £0.0525. Multiplying this figure by 20,000 birds and 107 days generates an estimated economic loss of £112,500 per annum if necking was used under the new Regulation 1099/2009. The table below presents the culling cost as well as the opportunity cost of lost production if Regulation 1099/2009 is imposed in 2013.

Table 8: Costs of necking when Regulation 1099/2009 is imposed in 2013

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Necking</i>										
Number of birds culled		125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000
Cost per bird		0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
Total		8,750	8,750	8,750	8,750	8,750	8,750	8,750	8,750	8,750
Lost production			112,500	112,500	112,500	112,500	112,500	112,500	112,500	112,500
Total Cost		8,750	121,250	121,250	121,250	121,250	121,250	121,250	121,250	121,250

PV		8,454	113,188	109,361	105,662	102,089	98,637	95,301	92,079	88,965
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Note: See Annex 2 for further details of calculations and data sources
Numbers may not add due to rounding

Regulation 1099/2009 will impose significant restrictions on the stunning currents and frequencies which can be used in waterbaths leading to higher production losses (from damaged produce) post 2013 (details of the production losses are contained in Annex 3) but no changes to operating costs. The UK is seeking to secure some revisions to the regulation 1099/2009 currents and frequencies. This would reduce but not eliminate the additional production losses. Once installed, waterbath stunning equipment is not subject to specific design life limitations or a regular replacement cycle. Maintenance costs have not been included.

The table below considers the production losses and operating costs associated with using waterbaths both in the situation where the UK amendment proposal is successful and where it is not. The low benefit estimate on the summary page represents the case where the UK amendment proposal is successful.

Table 9: Costs of waterbaths & Argon CO₂ when Regulation 1099/2009 is imposed in 2013

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<i>Waterbath</i>										
Labour cost		971,559	971,559	971,559	971,559	971,559	971,559	971,559	971,559	971,559
Operating Cost		51,909	51,909	51,909	51,909	51,909	51,909	51,909	51,909	51,909
<i>Production Losses:</i>										
EU			3,781,250	3,781,250	3,781,250	3,781,250	3,781,250	3,781,250	3,781,250	3,781,250
UK amendment			1,796,094	1,796,094	1,796,094	1,796,094	1,796,094	1,796,094	1,796,094	1,796,094
Argon CO ₂ and Nitrogen CO ₂										
Operating Cost	-	666,000	666,000	666,000	666,000	666,000	666,000	666,000	666,000	666,000
Labour Cost	-	825,825	825,825	825,825	825,825	825,825	825,825	825,825	825,825	825,825
Total: EU		2,515,293	6,296,543	6,296,543	6,296,543	6,296,543	6,296,543	6,296,543	6,296,543	6,296,543
Total: UK		2,515,293	4,311,387	4,311,387	4,311,387	4,311,387	4,311,387	4,311,387	4,311,387	4,311,387
PV: EU		2430235	5877890	5679121	5487073	5301520	5122282	4949026	4781668	4619969
PV: UK		2430235	4024726	3888624	3757125	3630072	3507316	3388711	3247117	3163398

Note: See Annex 2 for further details of calculations and data sources
Numbers may not add due to rounding

The following table summarises the monetised costs and benefits of scenario 2 and indicates the tables above from which estimates are drawn. Key data from this table are also shown on the summary page for this scenario at the beginning of this IA.

Table 10: Summary of Costs and Benefits for Scenario 2 (£'000)

	Annual Avg (1)	Total Present Value	Source of data
Benefits (i.e. costs saved)			
Necking	97.8	0.8	Table 8
Waterbaths and Ar/CO ₂ and N/CO ₂	5,289	44,249	Table 9
Total Benefits	5,387	45,063	
Costs			
WHG/CGU	46	472	Table 6
Biphasic CO ₂	2,683	25,316	Table 7
Total Costs	2,729	25,788	
Net Benefit	2,658	19,275	

(1) At constant prices but excluding transitional costs

Non-monetised benefits

These measures result in un-quantifiable animal welfare benefits. Moving from waterbath to biphasic CO₂ stunning limits the use of inversion and live shackling and reduces the risk of pre-stun shocks and application of wrong currents (leading to electro immobilisation which is painful and illegal) . The welfare impact is likely

to be high. However It is incredibly difficult to accurately measure the extent of this welfare improvement and its value to society. The existing use of neck dislocation will be slow to deal with a disease outbreak unless a large workforce can be mobilised quickly. This could increase time of bird suffering, delay eradication of disease and lead to a wider spread of pathogens than may be the case if gas culling was used. A prolonged animal disease outbreak could impose significant costs and adverse animal welfare consequences, dependent upon its length and spread. Neck dislocation can lead to a poor welfare outcome depending on operator skill and fatigue. The positive welfare impact is likely to be high, however it is difficult to measure the extent of this welfare improvement and its value to society. To inform capital investment decisions poultry business operators are pressing for clarity on the gas mixtures that will be permitted in the UK, implementing this policy would provide the clarity required.

Prosecution deadline

Costs – Amending the deadline for presenting prosecution cases to the courts may marginally increase the number of prosecutions and generate an associated cost however, the overall impact is expected to be negligible. The only cases likely to be affected are where evidence is collected by a third party and there is a delay in bringing the evidence to the attention of the prosecuting authorities. This has only affected one case over the last five years but is something we would wish to avoid in future as it could prevent a potentially serious breach being prosecuted.

Benefits – Altering the cut-off date for court prosecution cases will increase the flexibility and effectiveness of enforcement activities. If enforcement is stronger firms will have less incentive to be non-compliant thus potentially resulting in increased compliance and a positive welfare outcome.

One in One Out

The preferred option will lead to a reduction in regulatory burdens on both small and micro businesses.

Risks and assumptions

It has been assumed that if the cost to industry of implementing newly permissible methods is greater than the existing techniques used there will be no new uptake of the measures. Based on culling trends over the last 3 years it has been assumed that there are 6 salmonella related culling incidents per year which affect 125,000 birds. In addition culling may be required in the event of a natural disaster or notifiable disease outbreak. Using WHG for culling incurs relatively high unit costs but no capital costs whereas using CGU incurs relatively low unit costs but high capital costs. It is unknown which method industry will prefer (CGU or WHG) as certain chicken houses are unsuitable for WHG therefore it has been assumed that 50% of culling is done using CGU and 50% uses WHG.

There is a risk that if these interim changes are not made industry will postpone investment decisions. This could have an adverse impact on welfare and will increase costs to industry when Regulation 1099/2009 comes into effect. Any business that converts from waterbath stunning to gas stunning now can only use Argon/CO₂ gas mixtures. Such businesses would be faced with the additional cost of conversion if they wish to realise the cost savings associated with biphasic CO₂ stunning following implementation of Regulation 1099/2009 in 2013. As cheaper Biphasic CO₂ is already permitted elsewhere in Europe there is a risk the industry in the UK will be placed at a competitive disadvantage if current restrictions on the use of gas for slaughter purposes are maintained.

There is also the unlikely event that Regulation 1099/2009 will not be adopted as planned by the EU in 2013, in this instance the NPV will be the lower value derived in Scenario 1 rather than the higher value in Scenario 2.

Those supporting earlier research publications on CO₂ aversiveness might raise concern and put pressure to restrict the gas mixtures permitted under biphasic CO₂, however if there is agreement on which gas mixtures are to be used this should not represent a problem. Further there is wide appreciation of the further benefits that gas stunning offer by removing the need to invert and shackle birds therefore the risk is minimal.

Further details of the assumptions and raw data used in the cost/benefit analysis can be found in Annex A. Details of the assessment of production losses associated with revised waterbath stunning currents and frequencies is attached at Annex 3.

Administrative burden and policy savings calculation

Administrative burden

No additional administrative burdens are incurred if option 1 is selected.

Policy Savings Calculation

There are no policy savings involved.

Wider impacts

It is not expected that any of the options under consideration would have wider impact beyond those considered here.

Post implementation review

These changes will be absorbed into new legislation implementing Regulation 1099/2009 from 1 January 2013. A review of the overall implementation package will be undertaken 5 years after implementation (i.e. in 2018/2019)

Summary, preferred option and implementation plan

The preferred option is to amend the legislation immediately as proposed at Option 1.

Statutory equality duties

The preferred option has no impact on age, disability, gender, religion or belief, race, sexual orientation, transgender, working patterns or any other matter covered by statutory equality duties.

Economic impacts

The preferred option has no impact on domestic competition issues and does not have a disproportionate impact on small businesses. The preferred option will improve competitiveness in relation to similar businesses in other parts of Europe.

Environmental impacts

The Integrated Pollution Protection and Control (IPPC) Directive applies to slaughterhouses with a capacity over 50 tonnes per day. There are about 730 slaughterhouses of this size in the EU. All businesses covered by the IPPC require a permit to operate. This requires the business to adopt the Best Available Techniques (BAT) to control pollution. BAT is a dynamic concept which takes account of new and emerging technology. The BAT process is administered through the European IPPC Bureau which organises the exchange of information and the preparation of BAT reference documents (BREFs).

The slaughterhouse BREF was published in 2005. This indicates that BAT for stunning birds is the use of inert gas to stun birds in their transport modules. The BREF suggest this reduces dust emissions and improves meat quality. The BREF does not preclude the use of other stunning methods where these produce equivalent or better environmental outcomes. The preferred option involving changes that will make it more cost effective for businesses to switch to gas stunning, is consistent with the current view of BAT in relation to slaughter of poultry.

Social Impacts

The preferred option has no impact human rights or rural issues.

The preferred option could have a positive impact on health and well being as a significant proportion of our stakeholders are not in favour of live shackling and inversion. The changes proposed address this concern.

There will be no significant impact on the Justice system as the preferred option involves no new offences or penalties. However the proposal to amend the time limits for bringing prosecutions may marginally increase prosecutions (currently 5 - 8 per annum) under this legislation.

Sustainable Development

The preferred option has no impact on sustainable development.

Competition

The preferred option is de-regulatory and has no impact on domestic competition. The changes proposed will make the industry in the UK more competitive with their counterparts in Europe. There are sufficient firms that can afford to undertake the significant capital investment required for gas slaughter to prevent a monopoly supply situation.

Small firms

Most broiler, breeder and layer units will be small businesses as will poultry slaughterhouse operators. Introducing a de-regulatory policy is likely to have a positive impact on small firms. Investment in gas stunning is unlikely to be economically viable for poultry producers with a low annual throughput. In addition to our approaches to the Commission research into alternatives to conventional electric waterbath stunning systems is being undertaken to help ensure smaller businesses have a viable alternative to help mitigate the negative impact of the regulation 1099/2009 waterbath stunning currents and frequencies when it is implemented in 2013.

COST / BENEFIT ASSUMPTIONS AND DATA

The following tables summarise the assumptions and sources used in the Cost Benefit Analysis.

Necking:

Before Regulation 1099/2009	Value	Source:
Neck dislocation rate per person per hour	100	Information from practitioner
Neck dislocation staff cost per hour	7	Industry information on labour rates
Average cost per bird	0.07	Calculation

Catching, clearing and Loading:

	Value	Source:
Birds caught by gang per hour	4,000	AH publication on use of CGUs
Cost of gang per hour	35	Industry information on labour rates
Cost per bird	0.00875	Calculation

Gas Culling Cost:

	Value	Source:
Birds per gas load	300	AH publication on use of CGUs
Gas cost per load	20	AH publication on use of CGUs
Cost per bird	0.066	Calculation

Veterinary Cost:

	Value	Source:
Veterinary Supervision per day	600	Information on veterinary charge out rates
Catching gang birds per hour	4,000	AH publication on use of CGUs
Hours per day	7	Average working day
Cost per bird	0.02	Calculation

Slaughter labour Costs:

	Value	Source:
Birds hung live per hour (waterbath)	1,700	Civic consulting study of poultry stunning and killing practices
Birds hung dead per hour (Gas)	2,000	Civic consulting study of poultry stunning and killing practices – June 2007
Rate per person per hour	7	Industry information on labour rates
Cost per bird (waterbath)	0.0041	Calculation
Cost per bird (gas)	0.0035	Calculation

Other:

Cost:	Value:	Source:
Transport	£500 per culling incident	Assumed average cost
WHG Service cost per single 13,000m ³ broiler house	7,500	AH emergency planning team
Biphasic CO ₂ cost per 1000 birds	1.00	Civic consulting study of poultry stunning and killing practices
Argon CO ₂ cost per 1000 birds	8.00	Civic consulting study of poultry stunning and killing practices
CGU capital cost per unit	4,000	AH emergency planning team
Waterbath operating cost per bird	0.00022	Civic consulting study of poultry stunning and killing practices
Capital Cost	12%	Commercial rate
Biphasic CO ₂ plant	400,000	Industry figure

Electric waterbath production losses

Production losses using existing industry standards for waterbath stunning currents and frequencies – assumed to be negligible

Production losses using regulation 1099/2009 standards for waterbath stunning currents and frequencies (see calculation below):

Number of birds slaughtered annually in the UK = 832m

Number stunned using CAS (25% of total¹) = 208m

Number stunned electrically (832 – 208) = 624m

Proportion of bird sold deboned² = 60%

Number stunned electrically and sold deboned (624 x 60%) = 374m

Data taken from “Effect of Waterbath Stunning Current, Frequency and Waveform on Carcase and Meat Quality in Broilers” Rob Barker – September 2006

Table 1

Percentage and Number of Birds Requiring Trimming or Subject to Downgrading						
	Percent				Number (Million birds) ³	
	DC 600 Hz 80 ma	AC 600 Hz 150 ma		DC 600 Hz 80 ma	AC 600 Hz 150 ma	Increase
Medial Breast Muscle	4.25	12.25		15.9	45.8	29.9
Ventral Breast Muscle	1.5	2.0		5.6	7.5	1.9
Minor Breast Muscle	7.25	16.75		27.1	62.6	35.5
Average	4.3	10.3				

Conclusion:

If it is assumed that Medial, Ventral and Minor breast muscle damage affects the same birds rather than different birds, between 29.9m and 35.5m birds would be affected by downgrading if currents and frequencies increase from DC 600 hz and 80 ma to AC 600hz and 150ma

Downgrading costs

It is assumed the value of breast trim is one third the value of breast fillet (Source Steve Moore).

Assuming breast fillet is worth £3.50 / kg the value of the trim will be £1.17 / kg. This represents a loss of £2.33 / Kg.

Downgrading levels / cost

Assume average breast meat weight is 300 grams per bird.

Assume current trim levels are commercially insignificant

If trim level increases to 10% downgrade is 30 grams per bird i.e. a loss of £0.07 per bird (@ £2.33 / Kg)

If trim level increases to 20% downgrade is 60 grams per bird i.e. a loss of £0.14 per bird (@ £2.33 / Kg)

If trim level increases to 30% downgrade is 90 grams per bird i.e. a loss of £0.21 per bird (@ £2.33 / Kg)

Estimated downgrading loss to industry if frequency / current changed from DC 600 hz / 80 ma to AC 600hz / 150 ma based on Rob Barker's paper

Table 2⁴

Downgrade %	Loss £/Bird	Loss £m per year	
		If 30 ⁵ m Birds Affected	If 35 ⁵ m Birds Affected
10	0.07	2.1	2.5
20	0.14	4.2	4.9
30	0.21	6.3	7.4

Conclusion

If currents and frequencies increase from DC 600 hz and 80 ma to AC 600hz and 150ma industry downgrading losses could increase by between £2.1m and £7.4m per annum.

Assume additional downgrading losses of at least £10m if UK does not succeed in negotiating revision of regulation to increase maximum frequency at 150ma from 400hz to 600hz.

Assume additional downgrading losses of £4.75m (midpoint of range) if UK is successful in negotiating increase in maximum frequency at 150ma from 400hz to 600hz.

Some 624m birds / year are currently slaughtered using a waterbath. Based on the BPC survey it is assumed 11 plants accounting for some 236m birds are planning to switch from waterbath to gas stunning. This will reduce the £10m downgrading losses by £3.781m if no change to stunning currents and frequencies is negotiated. If the UK is successful the downgrading loss of £4.75m would be reduced by £1.796m.

Footnotes:

1. Source - CIVIC consulting study on the stunning / killing practices in slaughterhouses and their economic, social and environmental consequences - Final Report - Part II poultry 25 June 2007 page 44.
2. Source Product Sales and Trade (National Statistics)
3. Based on 374m birds stunned electrically and deboned
4. Table 2 assumes that at DC 600 hz / 80 ma current trim levels will be commercially insignificant.
5. Figures taken from table 1 – 29.9m rounded to 30m and 35.5m rounded to 35m