



European
Commission



DG Health and
Food Safety

OVERVIEW REPORT

Shared practices in slaughter hygiene

Further information on the Health and Food Safety Directorate-General is available on the internet at:
http://ec.europa.eu/dgs/health_food-safety/index_en.htm

Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of the following information.

Luxembourg: Publications Office of the European Union, 2020

© European Union, 2020

Reuse is authorised provided the source is acknowledged.

The reuse policy of European Commission documents is regulated by Decision 2011/833/EU (OJ L 330, 14.12.2011, p. 39).

For any use or reproduction of photos or other material that is not under the EU copyright, permission must be sought directly from the copyright holders.

© Photos : <http://www.istockphoto.com/>, Health and Food Safety Directorate-General



EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR HEALTH AND FOOD SAFETY

Health and food audits and analysis

DG(SANTE) 2017-6246

Overview report
on shared practices in slaughter hygiene

Executive Summary

This overview report provides a summary of the results of DG Health and Food Safety study visits in relation to slaughter hygiene in a number of EU Member States and Norway, and a series of associated workshops attended by representatives of EU Member States plus Switzerland, Norway, Iceland and the European Free Trade Association Surveillance Authority (ESA). In particular, it highlights a number of competent authorities' working practices which have been found to have a positive impact on slaughter hygiene, and thus on consumer protection.

The countries' national experts, who attended the study visits and workshops, were presented with a series of working practices in place in the countries visited aimed at addressing problems encountered by all competent authorities and ensuring optimal slaughter hygiene and minimum levels of carcass contamination. The experts found many of these practices to be good, some excellent and/or innovative, with a number of them being highlighted for their particularly positive impact as well as for their transferability into their national working practices. Some countries have already begun to do so.

The main identified shared arrangements and working practices that supported competent authorities' verification and controls included: "clean livestock" policy, on-line clipping of livestock, carcass contamination recording systems, official verification procedures for carcass contamination, pooling technical and managerial responsibilities, sampling and analysis performed by competent authorities on microbiological criteria, risk profiling of slaughterhouses and publication of official control results.

In addition, a number of key elements found in environments that are conducive to good slaughter hygiene were highlighted. Also underlined was the importance of slaughterhouse operators having well thought-out and developed slaughtering techniques, and for competent authorities to be aware of these and to have a positive attitude towards new developments in this area.

Table of Contents

1	Introduction.....	1
2	Objectives, scope and legal basis.....	1
3	Background and methodology	2
4	Competent authorities procedures.....	2
4.1	Clean livestock policy	3
4.2	On-line clipping of livestock.....	4
4.3	Carcass contamination recording system	5
4.4	Official verification procedures of carcass contamination.....	7
4.5	Pool of official experts with technical managerial responsibility	7
4.6	Sampling and analysis performed by Competent authorities on microbiological criteria.	8
4.7	Risk profiling of slaughterhouses.....	8
4.8	Publication of official controls results	9
5	Key elements found in environments that are conducive to good slaughter hygiene.....	9
6	Initiatives being implemented by competent authorities	10
7	Conclusion	11
	ANNEX I – LEGAL REFERENCES	13
	ANNEX II – Study visits and workshops that took place as key project elements	14
	ANNEX III – Slaughtering techniques	15

1 INTRODUCTION

Slaughter hygiene is an important factor in ensuring the safety of meat and it is for this reason that the production of carcasses free from any visible contamination is a key objective under EU legislation. The presence of contaminated carcasses at the end of the slaughtering process, with faecal contamination, shows a failure by all those responsible in reaching the objectives set out in EU legislation, and therefore in ensuring appropriate consumer protection.

Commission services have over the years carried out extensive inspections and audits in the area of slaughter hygiene, both in EU Member States as well as in non-EU countries with access, or wishing to access, the EU market. The overall improvements in this area over the years, and the level of compliance with legislative requirements, have been significant. Carcasses, and ultimately meat, are now safer to consume than they have ever been in the past, with diseases in humans attributed to the consumption of meat and its products having decreased over the last ten years¹.

In spite of this progress, shortcomings in slaughter hygiene have nonetheless remained a regular finding during Commission audits. At the same time, it has been observed that if examples of good competent authorities' working practices are shared with other competent authorities, these can help to achieve further improvements in this area.

It is for this reason that the Commission services developed this project on "shared practices in slaughter hygiene", with the aim of supporting competent authorities, and collectively highlighting the most relevant working practices in terms of contributing to high levels of slaughter hygiene. Thus, this project provided an opportunity to expose representatives from these countries to ways of improvement, and to discuss issues related to slaughter hygiene and difficulties faced, with their peers. In that sense, the project should be seen as an alternative, and complementary to, the regular audit work in the area.

This report is divided into three main sections. The first section focuses on competent authorities' practices and management procedures that have been highlighted as good practices. The second reviews some key elements that can be found in environments that are conducive to good slaughter hygiene. Finally, it looks at how some of these practices are beginning to be implemented by competent authorities on foot of this project.

2 OBJECTIVES, SCOPE AND LEGAL BASIS

The aim of this overview report is to assist and facilitate the development of effective control and monitoring systems by competent authorities in EU Member States. This has been done by facilitating discussion and the sharing of working practices among competent authorities, so that it will help to further raise compliance levels with legislative requirements.

The scope covers the slaughter process of bovine, ovine, caprine and porcine animals i.e. from the arrival of live animals to the slaughterhouse to the end of the process with the storage of carcasses in the chilling room.

¹ The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2016 (EFSA-Q- 2016-00572) <http://onlinelibrary.wiley.com/doi/10.2903/j.efsa.2017.5077/full>

The content and practices described in this report represent the collective views and positions of the national experts (representing all EU Member States plus Switzerland, Norway and Iceland) that took part in this project. They do not constitute an official EU Commission view or position.

EU legislation is very clear in that the responsibility to ensure compliance with legislative requirements falls directly onto the slaughterhouse operators² who are responsible for the operations at the slaughterhouses. It is the responsibility of competent authorities to carry out official controls to verify slaughterhouse operators' compliance,³ and that health marks shall only be applied to carcasses that, having undergone post-mortem inspection, have been found to present no deficiencies and are deemed fit for human consumption⁴. In addition, links were made with professional sectorial associations⁵, who are working on professional research and guidance on slaughter hygiene, to ensure "cross-fertilisation" and possible alignment of views.

3 BACKGROUND AND METHODOLOGY

The main element of this project (Annex I) consisted of 16 study visits, that took place between January 2015 and October 2016. In each study visit, one representative of the Commission services and four national experts were hosted by the competent authorities of the chosen country to discuss their national procedures in the area and to identify good practices that could then be shared with all of the project's national experts. Four workshops took place to discuss in greater detail the findings of the study visits and to agree on identified good practices.

It was from the outset considered unrealistic to aim for a "one size fits all" approach, given the significant differences between competent authorities' organization, size, type of industry and predominant species being slaughtered. Therefore, the focus was on enabling competent authorities to learn from their peers and, as appropriate, to extract and tailor to their needs those practices that they considered best suited to be implemented at their national level. The final stage of this project is the publication of this overview report.

All relevant material, including presentations, national procedures, videos and reports were made available via a web-sharing platform and remain available to officials from EU countries and for those other countries that took part on this project⁶.

4 COMPETENT AUTHORITIES PROCEDURES

The manner in which official controls are organised and delivered can have a major impact on the performance of slaughterhouse operators and on food safety. Competent authorities must take decisions on corrective actions and enforce compliance when the necessary requirements are not being met by slaughterhouse operators. For this to be done in an efficient and effective way, the development of clear

² Regulation (EC) No 853/2004 of the European Parliament and of the Council, Annex III, Section I, Chapters II (requirements for slaughterhouses), IV (Slaughter hygiene); (OJ L 139, 30.4.2004, p. 55).

³ Regulation (EU) 2017/625 of the European Parliament and of the Council (OJ L 95, 7.4.2017, p. 1).

⁴ Commission Implementing Regulation (EU) 2019/627 Art. 7 to 48 (OJ L 131, 17.5.2019, p. 51).

⁵ European Livestock and Meat Traders Union (UECBV) working group on good practices slaughter hygiene guidance for the prevention of faecal contamination.
http://www.uecbv.eu/UECBV/documents/Copie_0010089_042_Orig_10089_SlaughterhygieneguidelinesGeneralpart11275.pdf. Hygenea project: "Risk based hygiene control in European abattoirs".

⁶ CIRCABC "Share best practices in Slaughter Hygiene". Full accessibility provided to national experts that took part on this project.

baselines, data comparison tools, defined standards and trialled and tested procedures are integral parts to the success of competent authorities' actions. In several instances they also support slaughterhouse operators in understanding their own weaknesses and performance level by comparing them to their peers.

The policies and procedures set out below were highlighted based on their proven record to have a significant impact. Some of them are not, strictly speaking, official controls (e.g. clean livestock policy) as they are implemented by slaughterhouse operators. Nevertheless, they are included due to their direct interaction with the official controls, or to highlight a competent authority policy that allows slaughterhouse operators to implement such procedures.

4.1 CLEAN LIVESTOCK POLICY

The arrival of clean animals to slaughterhouses has always been a fundamental pillar supporting the hygienic processing of carcasses. The dirtier the hide or fleece of the animal, the higher the risk of contamination of the carcasses, and hence, the higher the potential risk to human health.

European legislation places the responsibility on the keeper (generally the farmer) to ensure that animals being sent for slaughter leave their premises as clean as possible. The slaughterhouse operator, for his part, has to ensure that animals accepted to enter into the processing line do not present a risk of contamination⁷, with the competent authority having the role to verify that both the keeper and the slaughterhouse operator fulfil their responsibilities, taking appropriate enforcement action if they fail to do so⁸.

Implementing this simple principle presents, in reality, significant challenges. Factors such as weather, type of production (indoor vs. outdoor), facilities and hygienic status at farm level as well as transport conditions, all play an important role in affecting the cleanliness of the animals and create the need to apply corrective actions. Unfortunately, in the current market environment with there being a shortage in the availability of livestock, slaughterhouse operators try to avoid the application of unilateral remedial actions affecting farmers, for fear that otherwise such farmers would, in the future, shun their slaughterhouses and divert their trade instead towards more lenient competitors.



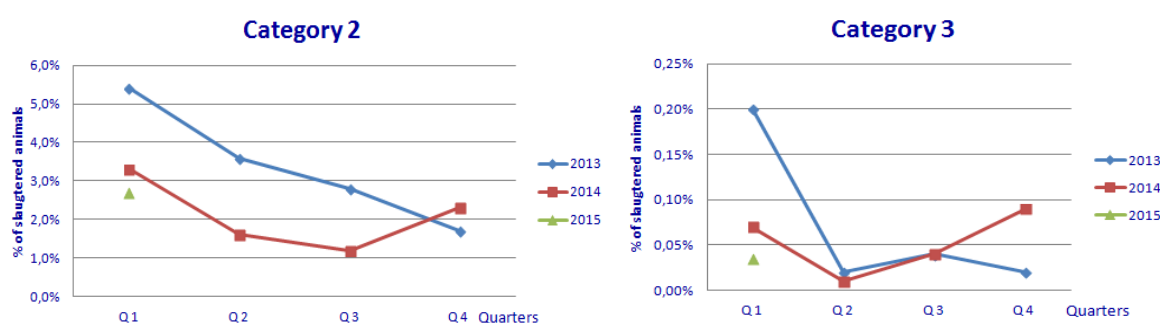
Pictures 1-3: Categorisation of cattle based on cleanliness Cat. 1 clean and dry; Cat. 2 Dirty, Cat.3 Very dirty.

⁷ Regulation (EC) No 853/2004 Annex III, Section I, Chapter IV, point 10.

⁸ Regulation (EU) 2019/627, Article 11(4).

As an example, in Belgium, the competent authority, in cooperation with the associations of cattle breeders, transporters and slaughterhouse operators, has developed a clean livestock protocol⁹. In this protocol the level of cleanliness is divided into three categories, and depending on the categorisation it triggers different corrective actions from slaughterhouse operators. Clean or slightly dirty (Category 1) animals are fit to be slaughtered. Dirty animals (Category 2) need prior corrective actions to be applied, e.g. animals need to be dried or dirty areas on the animal need to be clipped before entering the processing line; they are slaughtered after Category 1 animals, and at slower processing line speeds. Very dirty animals (Category 3) are considered unfit for slaughter and the keeper of those animals is required to take remedial actions, similar to those already outlined for Category 2 animals, but of a more extensive and intensive nature.

A key feature of the Belgian protocol is that the categorisation carried out by the slaughterhouse operator is encoded in the national livestock database. This enables the competent authority to fully trace and monitor farmers' performance and adherence to the clean livestock protocol and take targeted enforcement actions against persistently non-compliant ones. Moreover, in the case of Category 3 animals the farmer is required to carry out corrective action himself or alternatively pay €150 per animal for the slaughterhouse operator to take corrective actions on his behalf.



Graph 1-2: Number of Category 2 and Category 3 cattle arriving to Belgian slaughterhouses as recorded in the Belgian livestock database.

The competent authority verifies implementation and takes the necessary corrective actions against those slaughterhouse operators who fail to implement the protocol, thus providing the necessary assurances to the sector as a whole that the protocol is consistently applied throughout the country. The positive results can be seen with the decreasing trend in the number of Category 2 and Category 3 livestock arriving at slaughterhouses in their country.

4.2 ON-LINE CLIPPING OF LIVESTOCK

In certain countries, external factors such as adverse weather conditions coupled with the construction and design of farming facilities (e.g. slatted floors) results, at certain times of the year, in a significant amount of cattle, and to a lesser extent sheep, that could be categorised as Category 2 or Category 3. In those countries, the competent authorities consider that it is not feasible to fully implement the clean livestock protocol as previously described, and allow the arrival of such animals to the slaughterhouse for remedial action to be taken there. Such remedial actions either consists of clipping or shearing, in the lairage, of Category 2 animals just before entry into the slaughter line or, for health and safety and/or animal welfare reasons, clipping takes place after the animal has already been slaughtered.

⁹ "Bon état des toisons pour des viandes sûres" Agence fédérale pour la Sécurité de la Chaîne alimentaire (Belgium) http://www.afsca.be/publicationsthematiques/documents/2006-12_Folder_TS_Fr_S.pdf

In Ireland, the competent authority has developed a protocol that permits on-line clipping of cattle by slaughterhouse operators. The competent authority allows this to be applied by slaughterhouse operators that have developed a standard operating procedure that is approved as part of the clean livestock policy. Category 2 animals are slaughtered and clipping, which is considered a hygiene aid, is allowed, if certain prerequisites are met, after bleeding but before commencement of carcass dressing. Those prerequisites cover, among other things, clipping equipment that incorporates suction, and a separate working area that avoids the risk of contamination of subsequent steps of the processing line.

In Norway, there was a long tradition of shearing sheep on farm prior to slaughter, but an outbreak of *E. coli* in 2006 highlighted this practice as an area in need of improvement. The result was a shift towards shearing after slaughter but before carcass dressing commences. The advantages of this, as explained by the Norwegian competent authority, are numerous, and included an increased capability to take corrective actions with dirty animals, less in-rolling of skins and reduced cross-contamination of carcasses and operators, reduced need for trimming and improved working environment and conditions for operators resulting in a better control over the dressing steps. The overall result has been a reduction in carcass visible contamination and an improvement in the carcass microbiological results.

To encourage farmers not to shear their sheep on the farm, economic incentives have been put in place such as reduced costs (or free service) for the shearing of animals at the slaughterhouse, and maintenance of the price paid for the wool. Furthermore, a financial penalty system has been developed by the competent authority for dirty animals arriving at the slaughterhouse that cannot be sheared (e.g. animals have been sheared on the farm more than 3 days prior to slaughter and have less than 1 cm thickness of wool, thus slaughterhouse operators are unable to take remedial action on-line). A further penalty is the diversion of the meat from such animals towards lower value heat treated meat products.



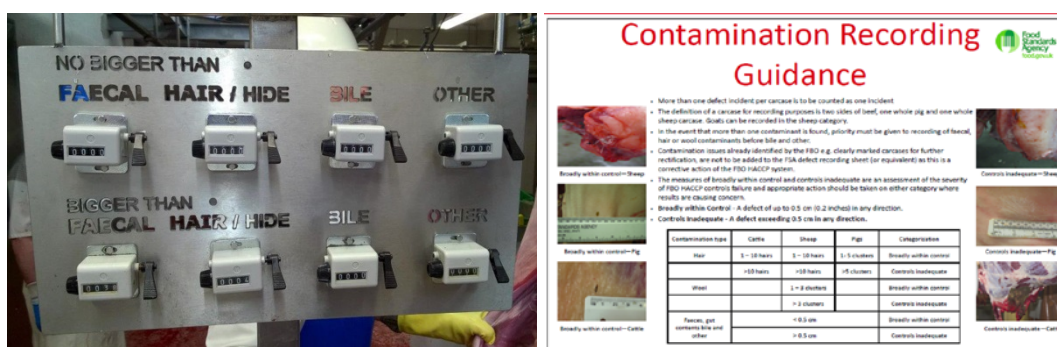
Pictures 4-6: Clipping of animals in the lairage prior slaughter. Clipping with suction equipment for on-line use. On-line shearing taking place on a sheep line, after bleeding but before the start of carcass dressing.

4.3 CARCASS CONTAMINATION RECORDING SYSTEM

As stated, EU legislation lays the responsibility with slaughterhouse operators to establish, implement and maintain systems for the production of safe food. The role of the competent authority is to verify compliance and, at slaughterhouses, to perform post-mortem inspections of meat and offal to affirm their fitness for human consumption. It is a clear requirement that carcasses are to be free from visible contamination before they are health marked, which provides the official approval on the carcasses' fitness for human consumption.

To this end, the competent authority in the United Kingdom has set out a procedure whereby all carcasses of cattle, sheep, goats and pigs are systematically assessed in a standardised way for the presence of visible contamination, at the last carcass post-mortem inspection post. Contamination episodes are categorised based on their severity and type of contamination (e.g. faecal, hair), with the slaughterhouse operator requested to take corrective action before official health marking can take place.

The benefit of this procedure is that by recording and analysing the results it permits the benchmarking and comparison of slaughterhouse operators, against their own historical performance and that of other similar operators. Performance indicators can be set for individual slaughterhouses and for the entirety of the sector, and targeted actions can be taken towards those operators consistently showing poorer performance than the agreed limits. Following the implementation of this procedure, the overall percentage of carcasses with episodes of contamination reaching final official carcass inspection point dropped significantly within the first few years, and the competent authorities were able to target their resources at those establishments with results consistently worse than the average.



Pictures 7-8: Counter plate for official use at last post-mortem inspection post for on-line contamination recording. Contamination recording guidance developed in the United Kingdom with the purpose of ensuring harmonization of the reporting by competent authority staff.

United Kingdom National statistics on carcass contamination presented at post portem inspection

Sept12	Oct12	Nov12	Dec12	Jan13	Feb13	Average	
11.6%	8.4%	8.3%	8.3%	9.6%	8.0%	9.1%	
Sept13	Oct13	Nov13	Dec13	Jan14	Feb14	Mar14	Average
7.1%	6.4%	7.0%	6.6%	6.3%	6.4%	6.2%	6.6%
Sept14	Oct14	Nov14	Dec14	Jan15	Feb15	Mar15	Average
5.8%	5.9%	5.8%	5.1%	5.3%	5.4%	5.2%	5.5%

Table 1: Average yearly results, for the first three years, of the implementation of the carcass contamination recording system in the United Kingdom¹⁰.

The British competent authority highlighted that one of the greatest challenges that they faced for the successful implementation of this procedure was to ensure harmonized application by the hundreds of officials performing post-mortem inspections all over the country. To this end they ran initial trial pilot projects, which were followed by training and validation exercises.

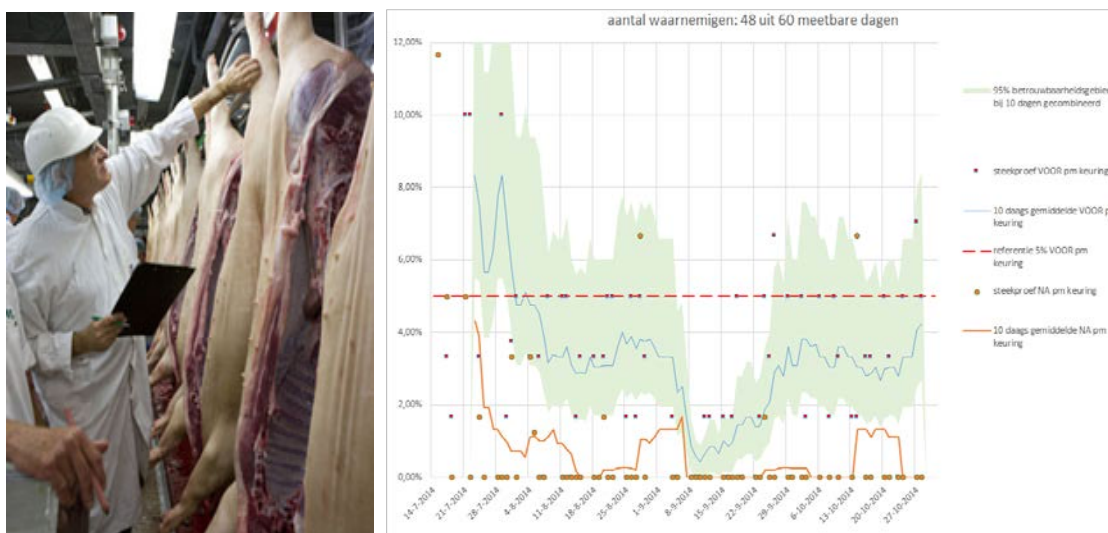
¹⁰ Figures show average number of carcasses, with an episode of contamination (either major or minor) being presented at final post-mortem inspection by the slaughterhouse operator. It must be highlighted that health marking is withheld by the competent authority until remedial action is taken by the operator.

4.4 OFFICIAL VERIFICATION PROCEDURES OF CARCASS CONTAMINATION

Carcasses that arrive to the chiller rooms having undergone final post-mortem inspection must be free from any visible contamination. Failure to do this underlines weaknesses not only regarding the performance of slaughterhouse operators' own control systems, but also that of the competent authority in that a health mark has been applied to non-conforming carcasses.

In the Netherlands, the competent authority has developed a procedure where the official veterinarian is to check a number of carcasses prior to the final post-mortem inspection post as well as in the chiller to assess the slaughtering process and presence of contamination. Specifically with regard to the control in the chiller, batches of twenty carcasses have to be assessed three times daily, with a "zero tolerance" approach to the presence of contamination.

A major added value of this official control procedure is gained by ensuring that all information gathered is uploaded in real time onto the central database, via a mobile phone application which has been developed specifically for this purpose. This allows "live" comparison and benchmarking between all slaughterhouses in the country for the same species, and officials are thus able to discuss and request corrective action from slaughterhouse operators or from their own inspection teams.



Picture 9 and Graph 3: Dutch official performing verification for carcass contamination in the chiller. All results are uploaded into the central database via a mobile phone application, which allows for data analysis and subsequent decision making.

4.5 POOL OF OFFICIAL EXPERTS WITH TECHNICAL MANAGERIAL RESPONSIBILITY

One of the issues faced by officials of competent authorities, who are regularly stationed at the same slaughterhouses, is the increased likelihood of becoming accustomed to the standards of their working environment and thus becoming subjective regarding the performance level of slaughterhouse operators. This situation is further complicated at slaughterhouses of smaller size, where the veterinarian is the only official presence on site, or in remotely located slaughterhouses where officials and slaughterhouse personnel are all part of a small and interdependent community.

To address this, the competent authority in France has set up a network of six national experts on slaughterhouse processes, who are in charge of a number of tasks ranging from providing technical support to officials in the field, to supervision of their performance, as well as to audit and evaluate slaughterhouse operators' compliance. This network has been able to identify weaknesses at a local level and on the suitability of national instructions, and therefore the necessary remedial actions by the official services can

be taken. Further gains have been an increased harmonization of official controls and the capability of these six experts to take high impact enforcement actions at slaughterhouse level, thus relieving the pressure on locally stationed officials.

4.6 SAMPLING AND ANALYSIS PERFORMED BY COMPETENT AUTHORITIES ON MICROBIOLOGICAL CRITERIA.

EU legislation¹¹ requires slaughterhouse operators to perform sampling and analysis at specified frequencies for certain microbes for which a microbiological criteria has been set. This criteria sets the acceptability of a product to be placed on the market or for the functioning of the production processes. Whilst the performance of official sampling and analysis is not explicitly laid down in EU legislation, it is the role of the competent authority to verify compliance via their official controls using the appropriate techniques, such as, for example, sampling and the testing of samples¹².

Ample evidence has been seen showing significant differences in sampling results and detected prevalence of certain microorganisms when comparing slaughterhouse operators' own results with those of the competent authorities. These differences tend to decrease and even disappear, once it becomes known that a sampling and analyses planning is a routine verification feature of official controls.

In Lithuania, the competent authority carries out annual programmes of sampling and analysis to verify slaughterhouse operators' performance on own testing of the carcass processing hygiene criteria. In 2015, it consisted of 1410 random samples taken in batches at their approved slaughterhouses. The competent authority uses the results of their own controls to request corrective action from slaughterhouse operators, and takes into account the reliability of the slaughterhouse operators' results as a key factor in determining whether to allow a reduction in the frequency of their microbiological sampling. Furthermore, as part of routine official controls, officials must be present at regular intervals during slaughterhouse operators' own sampling and packaging procedures, in order to verify conformance with required standards.

In Portugal an annual programme of sampling and analysis to verify processors performance on own testing on food safety microbiological criteria is implemented. A further benefit of their procedure is that the results from the processors are uploaded onto the competent authority's database to enable a detailed analysis between processors and against the results of official sampling and analysis, to identify areas of potential concern.

4.7 RISK PROFILING OF SLAUGHTERHOUSES

EU legislation prescribes a risk-based delivery of official controls, and this principle is widely adhered to in all countries that took part in this project. Some countries have developed this principle further by strengthening the link between the frequency of audits and daily official resource needs with slaughterhouse operators' performance. This has proven to be a major incentive for slaughterhouse operators to improve their performance, as it is a way to avoid additional official presence and the subsequent extra financial charges to be paid for the delivery of official controls as prescribed in EU legislation¹³.

¹¹ Commission Regulation (EC) No 2073/2005 on microbiological criteria for foodstuffs. (OJ L 338, 22.12.2005, p. 1)

¹² Regulation (EU) 2017/625 of the European Parliament and of the Council (Official Controls Regulation), (OJ L 95, 7.4.2017, p. 1-142).

¹³ Regulation (EU) 2017/625.

Some examples are the development of validated self-control systems (Belgium), with reduced official audit frequencies for establishments that achieve a higher compliance level. In opposition, slaughterhouse operators persistently non-compliant, under formal enforcement, or showing poor indicators on slaughter hygiene are subjected to an increase in the quantity of official resources deployed.

4.8 PUBLICATION OF OFFICIAL CONTROLS RESULTS

Several competent authorities have taken the decision to make the overall results of their official controls available to the general public in an easy to understand format, as a way to increase accountability. In some cases such as for Denmark, only the results of registered establishments (e.g. restaurants, butcher shops) are covered by this initiative, whereas in others (United Kingdom) it includes approved establishments. Some competent authorities (Lithuania) publish the list of establishments which are subject to major enforcement action by the competent authority, providing a brief description of the reason for the enforcement action.

This level of transparency and the type of communication is successful in three different ways. First, it acts as a deterrent towards operators with a lukewarm attitude towards fulfilling their legal responsibilities. Second, it aims to avoid that underperforming operators have a financial competitive advantage over those that are abiding by the rules. Third, it encourages an attitude towards achieving excellence among operators as they want to be classified in the best categories, 'acceptable' being no longer sufficient.

5 KEY ELEMENTS FOUND IN ENVIRONMENTS THAT ARE CONDUCTIVE TO GOOD SLAUGHTER HYGIENE

Throughout this project, experts taking part in the study visits highlighted a number of key elements that they considered supported good slaughter hygiene. These elements were seen as valuable as they improved the overall working standards and environments within slaughterhouses and thus reduced the need for corrective actions.

Some of the main elements highlighted where:

- The existence of well-organized processors' associations committed to proactively working with the competent authorities and to take responsibility for the development of processing standards. In Belgium, this level of mutual respect and trust has resulted in the development by associations of sectorial guidance for final agreement by the competent authority, linkages of software systems to enable exchange and extraction of "live" data even with the possibility of directly inputting information into official databases, as well as the implementation of validated self-control systems.
- Traditionally, in certain European countries (e.g. Hungary, Austria, Slovenia, Czech Republic, and Poland) there are well developed national vocational qualifications courses in the area of butchery, which last between three to four years. These courses, which also cover slaughtering techniques, require extensive in-work training and knowledge on hygienic processing and principles from the students. This results in highly skilled and qualified slaughterhouse personnel who are able to either quickly identify problems, and/or to prevent them from occurring on the first place. It is testimony to their skills that these personnel are highly sought within the EU, and countries where such qualifications have disappeared in the past are competing to entice trained butchers to come and work to their countries.
- Conversely, a strong direct link could be made between staff retention levels and hygienic processing in slaughterhouses. Whilst it is not the only factor affecting hygiene, slaughterhouse operators with a low staff turnover and who are able to retain their well trained staff, are more likely

to have good working practices as well as a better own control and management system. Some slaughterhouse operators reflect the skill levels of their personnel, and of which their hygienic performance is an integral part, in their pay bands. Slaughter operators applying such systems highlight that, in spite of the increase in salaries, they end up saving on overall expenses in the long run, due to the reduction in costs for hiring and training new staff, the reduction of the number of instances where corrective action is needed, as well as in the losses due to poor dressing.

- It is common practice by slaughterhouse operators in some countries to have a "Chief of the line" present in the slaughtering hall, who is in charge of the own control system and the management of the processing line. This position is usually filled by a highly skilled and experienced slaughter person who has seniority over the staff, and to whom staff quickly report to if they notice any issue during processing or at their work stations. In parallel, this person can identify issues him/herself and perform an on-the-spot verification of the different slaughtering steps, in order to find the source of the problem and to allow immediate remedial action, and subsequent preventive actions to avoid any re-occurrence.
- In some countries, the slaughtering of certain livestock species, and even the livestock slaughtering industry as a whole, is a minor economic activity with a limited throughput in a small number of slaughterhouses. This could create a number of limitations, such as basic processing equipment and staff with limited experience in the processing of such species. Competent authorities do sometimes suffer the same limitations due to a lack of knowledge and exposure within their own countries; this can have an impact on overall standards, as well as on the possibilities to raise these standards.
- Several slaughtering techniques, processes, and measures have been implemented in Europe and in countries exporting to the EU by slaughterhouse operators who have proven to be successful in achieving the desired objectives. Competent authorities should be aware of their existence, have knowledge in the value that they provide and have a proactive attitude towards any positive developments in this area.

Such techniques (Annex II), some of which are novel and relatively unknown at a European level, are a valuable addition to good hygiene practices of slaughterhouse operators. They are not intended to correct poor hygienic processing or poor design and maintenance of the processing line. They are, in many cases, the result of substantial research, and provide further assurance concerning food safety with regard to the final product.

6 INITIATIVES BEING IMPLEMENTED BY COMPETENT AUTHORITIES

This project has given competent authorities the opportunity to share their own experiences, including the national working practices that they have developed in order to help them to address the issues and challenges that they face regarding hygiene during slaughter. There has been a major effort to further disseminate the information gained, within their own countries, and in several cases work has already begun on transferring the knowledge gained from other competent authorities into national procedures that are tailored to their specific needs and the organizational structure of their own country. These improvements to previous working practices, including the way the competent authorities organize themselves, are positive developments which, as they continue to be applied in the future, contribute to the production of ever safer meat being produced in European slaughterhouses.

Commission services have been informed of several examples where the transfer, either totally or partially, of the aforementioned shared practices into competent authorities' national or regional guidance and

working practices is already underway. This is being followed up by the setting of benchmarks and the necessary corrective actions that are required from slaughterhouse operators.

Some of those initiatives included

- Activities for the dissemination of the information: cascade training and seminars, study visit reports translated into national language and made available via competent authorities' intranet, publications, new guidance documents and the creation of expert groups to provide practical training to local teams.
- Changes to official control and monitoring programmes: with audits specific to animal cleanliness, carcass contamination and slaughter hygiene, further development of software systems to better capture recording of carcass contamination, benchmarking and analysis of trends to assess impact of new working practices, official sampling and analysis monitoring programmes, mandatory communication and recording of slaughterhouse operators process hygiene criteria results, improved monitoring and analysis of trends, improved risk profiling of slaughterhouses, and internal audits on own-control procedures to manage performance of official personnel.
- Official instructions: new slaughter hygiene verification protocols, official letters to food business operators' associations on new procedures and on the expected standards for carcass cleanliness and including reminders as to their responsibility to put procedures in place to avoid contamination from taking place.
- Organization of competent authorities: in those Member States with a high level of devolution to regional and local authorities for the delivery of official controls, the initiatives have focused on the greater harmonization of applied standards and the sharing of information via development of networks of experts and common guidance in various areas such as approvals of establishments, management of officials' performance, and even creation of "uniformity teams".

Some competent authorities and slaughterhouse operators' working practices were novel or unknown to experts from other countries. The sharing of these working practices with all project national experts has enabled all involved to have a better understanding of the slaughtering process, the multiple different actions that can be taken to achieve a successful outcome and the need to remain open-minded and self-critical to enable the acceptance of how different working practices and novel slaughtering techniques can aid in the achievement of the overall objective.

7 CONCLUSION

Effective and efficient competent authorities' working practices and arrangements support compliance by slaughterhouse operators, who are ultimately responsible for the production of safe food. The world in which competent authorities operate continues to evolve and change, thus inflexible or inefficient official controls results in a reduction of the benefits that EU legislation aims to bring.

The countries' national experts who attended the study visits and workshops, were presented with a series of working practices in place in the countries visited aimed at addressing problems encountered by all competent authorities and ensuring optimal slaughter hygiene and minimum levels of carcass contamination. The experts found many of these practices to be good, some excellent and or innovative,

with a number of them being highlighted for their particularly positive impact as well as for their transferability into their national working practices. Some countries have already begun to do so.

The main identified shared arrangements and working practices that supported competent authorities' verification and controls included: "clean livestock" policy, on-line clipping of livestock, carcass contamination recording systems, official verification procedures for carcass contamination, pooling technical and managerial responsibilities, sampling and analysis performed by competent authorities on microbiological criteria, risk profiling of slaughterhouses and publication of official control results.

In addition, a number of key elements found in environments that are conducive to good slaughter hygiene were highlighted. Also underlined was the importance of slaughterhouse operators having well thought-out and developed slaughtering techniques and for competent authorities to be aware of these and to have a positive attitude towards new developments in this area.

ANNEX I – LEGAL REFERENCES

Legal Reference	Official Journal	Title
Reg. 853/2004	OJ L 139, 30.4.2004, p. 55, corrected and re-published in OJ L 226, 25.6.2004, p. 22	Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin
Reg. 2073/2005	OJ L 338, 22.12.2005, p. 1-26	Commission Regulation (EC) No 2073/2005 of 15 November 2005 on microbiological criteria for foodstuffs
Reg. 2017/625	OJ L 95, 7.4.2017, p. 1-142	Regulation (EU) 2017/625 of the European Parliament and of the Council of 15 March 2017 on official controls and other official activities performed to ensure the application of food and feed law, rules on animal health and welfare, plant health and plant protection products, amending Regulations (EC) No 999/2001, (EC) No 396/2005, (EC) No 1069/2009, (EC) No 1107/2009, (EU) No 1151/2012, (EU) No 652/2014, (EU) 2016/429 and (EU) 2016/2031 of the European Parliament and of the Council, Council Regulations (EC) No 1/2005 and (EC) No 1099/2009 and Council Directives 98/58/EC, 1999/74/EC, 2007/43/EC, 2008/119/EC and 2008/120/EC, and repealing Regulations (EC) No 854/2004 and (EC) No 882/2004 of the European Parliament and of the Council, Council Directives 89/608/EEC, 89/662/EEC, 90/425/EEC, 91/496/EEC, 96/23/EC, 96/93/EC and 97/78/EC and Council Decision 92/438/EEC (Official Controls Regulation) Text with EEA relevance
Reg. 2019/627	OJ L 131, 17.5.2019, p. 51-100	Commission Implementing Regulation (EU) 2019/627 of 15 March 2019 laying down uniform practical arrangements for the performance of official controls on products of animal origin intended for human consumption in accordance with Regulation (EU) 2017/625 of the European Parliament and of the Council and amending Commission Regulation (EC) No 2074/2005 as regards official controls

ANNEX II – STUDY VISITS¹⁴ AND WORKSHOPS THAT TOOK PLACE AS KEY PROJECT ELEMENTS

Country	Dates of Study visit
United Kingdom	26-30 January 2015
Ireland	26-30 January 2015
Belgium	9-13 March 2015
Lithuania	1-5 June 2015
Slovenia	14-18 September 2015
Norway	19-23 October 2015
Slovakia	9-13 November 2015
Sweden	30 November- 4 December 2015
The Netherlands	8-12 February 2016
United Kingdom	8-12 February 2016
Poland	14-18 March 2016
Italy	18-22 April 2016
Greece	12-16 September 2016
Austria	26-30 September 2016
Spain	17-21 October 2016
France	24-28 October 2016

Four workshops took place at the DG Health and Food Safety offices in Grange (Ireland). The dates of those workshops were 5-6 November 2014, 19-21 May 2015, 26-28 January 2016 and 17-19 January 2017.

¹⁴ Each study visit was attended by a Commission official, acting as facilitator, as well as four project national experts. A written record was made of each study visit with circulation limited to all members of the project. Their content was used to highlight national procedures of interest and to prepare the workshops.

ANNEX III – SLAUGHTERING TECHNIQUES

Non-exhaustive list of e techniques as highlighted by the experts on the value they provide or in their novelty. There are several further examples of other techniques that could be highlighted such as: two knives techniques for bleeding and dressing, using of oesophageal and anal plugs, tail and bung bagging, and additional pig carcass flaming.



Picture 10

Picture 10: Steam application with suction applied to carcasses after bleeding but prior to the start of dressing procedures. This is done in main contact areas and there where incisions will be made during dressing.



Picture 11

Picture 11: Steam application with suction applied to carcasses at the end of dressing prior final inspection point. This technique acts as a partial pasteurisation of the carcass in main contact areas, with subsequent reduction in bacterial counts.



Picture 12

Pictures 12: Hot water spraying of final carcass (>71 C on surface for 20 seconds) following by cold water spraying to stop heat penetration. This partial pasteurisation of carcass helps in reducing the number of microbes found.



Picture 13

Picture 13: The use of the "belly spreader" in cattle slaughter reduces significantly the incidence of "burst bellies" and, therefore, of cross contamination. This piece of equipment should be fitted with its own steriliser.



Picture 14

Picture 14: Downward hide pullers reduce the intervention during the dressing procedure, and risks of contamination. In some instances his process is further aided with electrical stimulation to the carcass to give rigidity and avoid recoiling.



Picture 15

Picture 15: Carcasses are being moved with hooks, on non-mechanical lines, which are regularly sterilised, as a way to avoid direct contact by operators.



Picture 16 and 17

Picture 16 and 17: The double cut of feet, first through the hid and secondly through the clean part after de-hiding effectively reduces the incidences of carcasses with contamination

Getting in touch with the EU

IN PERSON

All over the European Union there are hundreds of Europe Direct Information Centres. You can find the address of the centre nearest you at: <http://europa.eu/contact>

ON THE PHONE OR BY E-MAIL

Europe Direct is a service that answers your questions about the European Union. You can contact this service

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696 or
- by electronic mail via: <http://europa.eu/contact>

Finding information about the EU

ONLINE

Information about the European Union in all the official languages of the EU is available on the Europa website at: <http://europa.eu>

EU PUBLICATIONS

You can download or order free and priced EU publications from EU Bookshop at: <http://bookshop.europa.eu>. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see <http://europa.eu/contact>)

EU LAW AND RELATED DOCUMENTS

For access to legal information from the EU, including all EU law since 1951 in all the official language versions, go to EUR-Lex at: <http://eur-lex.europa.eu>

OPEN DATA FROM THE EU

The EU Open Data Portal (<http://data.europa.eu/euodp/en/data>) provides access to datasets from the EU. Data can be downloaded and reused for free, both for commercial and non-commercial purposes.

