Biological hazards & Animal Health and Welfare (BIOHAW) UNIT

# Scientific Network on Risk Assessment in Animal Health and Welfare

# Minutes of the 7th meeting of Network of the scientific National Contact Points (NCPs) for scientific support established under Art 20 of Council Regulation (EC) 1099/2009

**Held on 11-12 October 2022, WEB-conference**
**(Agreed on 31 October 2022)**

## Participants

- **Network Representatives of Member States (including EFTA Countries):**

| **Country** | **Name** |
|---|---|
| Austria | Katrina Eder |
| Belgium | Ester Peeters/ Claire Diederich |
| Bulgaria | Madlen Vasileva |
| Croatia | Branka Bukovič Šošič/ Andrea Mihaljevic |
| Cyprus | Elias Pantechis |
| Czech Republic | Simona Nincakova |
| Denmark | Else Enemark |
| Finland | Tiina Kauppinen |
| France | Sarah Bourgine/ Frederic Daniel Bernard Pronnier/ Julie Chiron |
| Germany | Inga Wilk |
| Greece | Katerina Marinou |
| Iceland | Sif Sigurdardottir |
| Ireland | Stephanie Ronan |
| Italy | Sara Rota Nodari |
| Latvia | Iveta Kocina |
| Netherlands | Marien Gerritzen |
| Norway | Cecilie Marie Mejdell |
| Portugal | Maria Jorge Correia/ Maria De Conceicao Blasques De Oliveira |
| Romania | Adina Ciurea |
| Slovak Republic | Zuzana Hurnikova |
| Slovenia | Arnej Galjot |
| Spain | Antonio Velarde |
| Sweden | Charlotte Berg |

- **Other Presenters**

Mette Herskin and Hans Spoolder - Members of the EFSA AHAW Panel on 11/10

- **European Commission:**

DG SANTE, Unit G5 Animal Welfare and AMR: Lucie Carrouée on 11/10, Denis Simonin on 12/10.

- **EFSA:**

BIOHAW Unit: Chiara Fabris (Chair), Gizella Aboagye, Mariana Aires, Sean Ashe, Denise Candiani, Michaela Hempen, Eliana Lima, Aikaterini Manakidou, Cristina Rojo Gimeno, Yves Van der Stede, Frank Verdonck, Marika Vitali.

## 1. Welcome and apologies for absence

The Chair welcomed the participants.

Apologies were received from Lithuania.

## 2. Adoption of agenda

The agenda was adopted without changes.

## 3. Agreement of the minutes of the 6th meeting of the Network of the scientific NCPs for Art 20 of Council Regulation (EC) 1099/2009, held on 05 and 06 October 2021, via web

The minutes were agreed by written procedure on 27 October 2021 and published on the EFSA website.

## 4. Introduction from EFSA BIOHAW Head of Unit and AW Team Leader

Frank Verdonck, recently appointed as BIOHAW Head of Unit, and Yves Van der Stede, Leader of the Animal Welfare Team, joined the Network meeting and introduced themselves to the Network representatives.

## 5. Topics for discussion

### 5.1. Revision of the EU legislation on the protection of animals in the context of the Farm-to-Fork (F2F) strategy.

Lucie Carrouée, Deputy Head of Unit DG SANTE, Unit G5 Animal Welfare and AMR, presented the ongoing activities of the European Commission (EC):

- EC proposal of a revised EU AW legislation by 2023 to align with latest scientific evidence, broaden its scope, make it easier to enforce and ensure a higher level of animal welfare. In June 20, the EC requested mandates from EFSA on pigs, broilers, laying hens, calves and transport, in June 21 an additional mandate on ducks, geese and quails focusing on cages. Some of these mandates also relate to the European Citizen Initiative (ECI) "End of Cage Age" calling for the phasing out to become effective in 2027. The Commission intends to propose to phase out and prohibit the use of such

cage systems, for all the species and categories referred to in the ECI, under conditions (including the length of the transition period) to be determined based on EFSA opinions, an impact assessment and a public consultation." Mandates on slaughter were already being addressed by EFSA and will be used as a basis for revision of Council Regulation (EC) 1099/2009.

- Conclusions of the fitness check were also presented as well as its next steps. The fitness check aims at the evaluation of the existing animal welfare legislation which includes 5 directives (1 on the protection of animals kept for farming purposes and 4 on the protection of laying hens, broilers, pigs and calves, respectively) and 2 regulations (1 on the protection of animals during transport and the other one on the protection of animals at the time of killing). The fitness check confirmed there is a need to i. align with current science: scientific and technological developments are not fully reflected in current rules, ii. broaden the scope: sub-optimal level of welfare of animals in the EU in particular where targeted legislation is lacking, iii. make it easier to enforce differences in application and enforcement across the EU, partly due to the vagueness of certain provisions, and robust indicators for monitoring and triggering improvements in animal welfare, iv. address societal demands: increasing societal expectations and ethical concern.
- After the impact, there is also an "inception of impact assessment" on the expected impact of the envisaged changes to the legislation. Four external studies were outsourced in support of the impact assessment: transport, animal welfare labelling, welfare at the time of killing, kept animals.
- The main policy options under assessment for revision of the legislation are: i. transport: space allowances, travel times and travel conditions, live animal exports to non-EU countries, unweaned and other vulnerable animals, better monitoring and enforcement by introducing new technologies, means of transports, adapted to new technologies; ii. kept animals: five domains, phasing out of cages/stalls/crates, requirements for livestock farming (including outdoor access), space allowances, mutilations, animal welfare indicators, competence of animal handlers, imported products of animal origin. The package of legislative proposals will be ready by the end of 2023.
- Other activities are the 6 sub-group of the AW Platform (next meeting to be held on 5-6 December 2022) and some key activities on animal transport: European Parliament Committee of enquiry on animal transport (ANIT) with a report published in January 2022, an European Court of Auditors (ECA) audit on animal transport (audit report publication planned for the spring next year), the Commission Studies on animal transport of unweaned male dairy calves over long distance and unfit end-of-career dairy cows, livestock vessels tertiary legislation (implementing Act and Delegated Act on official controls aspects) and the Commission audits on sea transport and unweaned calves.

**5.2. Update on the 2022 activities of EFSA on animal welfare in the context of the F2F strategy.**

Presentations were given about the most recent activities carried out by EFSA in the field of Animal Welfare.

### 5.2.1. Recently published EFSA's scientific opinion on welfare of pigs.

Hans Spoolder, from the Wageningen University & Research of The Netherlands, member of EFSA AHAW Panel and Chair of EFSA pig welfare working group, presented the Scientific Opinion (SO) on the welfare of pigs on farm that was adopted by the Animal Health and Animal Welfare (AHAW) Panel in June 2022 and published in August 2022. In this SO all pig categories were assessed: gilts and dry sows, farrowing and lactating sows, suckling piglets, weaners, rearing pigs and boars. However, the scientific information on the husbandry systems and the welfare consequences pertaining to boars is very limited and needs further development. The most relevant husbandry systems used in Europe are described. For each system the welfare consequences were assessed. A total of 16 welfare consequences were considered highly relevant to farmed pigs based on expert opinion combining their severity, duration and frequency of occurrence; related animal-based measures (ABMs) and hazards leading to these welfare consequences were also identified. Measures to prevent or correct the hazards and/or mitigate the welfare consequences are recommended. Recommendations are also provided on quantitative or qualitative criteria to answer specific questions on the welfare of pigs mainly in relation to tail biting and the ECI 'End the Cage Age'.

On the welfare of gilts and dry sows, the AHAW Panel concluded that the welfare consequences associated with grouping gilts and sows can be mitigated at any stage by adhering to the principles of good mixing. It is recommended how to mitigate group stress when dry sows and gilts are grouped immediately after weaning or in early pregnancy. Results of a comparative qualitative assessment suggested that long-stemmed or long-cut straw, hay or haylage is the most suitable material for nest-building. Confinement imposed prior to farrowing is detrimental to sow welfare because it restricts the sows' possibility to move around and prevents the functional performance of highly motivated nest-building behaviour.

On farrowing facilities and the welfare of farrowing and lactating sows and their piglets, the Panel concluded that with an average space for the sow of approximately 4.3 to 6.3 $m^2$ in the temporary crating systems, the same piglet survival level can be achieved as for a permanent crating system. The minimum confinement time of a sow in a temporary crating system to achieve this is 7 days after farrowing. However, the use of a temporary farrowing crate system cannot be advised as a step in a farm's transition from using farrowing crates to farrowing pens, unless the size of the temporary farrowing crate system is the same as that of the future free farrowing pen. A minimum period of six months is needed for staff and animals to adapt to housing lactating sows and their piglets in farrowing pens (as opposed to crates) before achieving stable welfare outcomes. The Panel recommends a minimum of 6.6 $m^2$ available space to the lactating sow to ensure piglet welfare (measured by live-born piglet mortality).

Above 6.6 $m^2$, the behavioural freedom of sows and piglets increases, but piglet mortality does not further decrease.

On piglet mutilations, the Panel concluded that tooth reduction is a stressful procedure that, if performed incorrectly, causes short- and longer-term pain. In particular, clipping is inherently injurious. Grinding to blunt the sharp tip of the tooth does not injure sensitive tissue when correctly performed. In individual litter situations where tooth reduction can be justified, the most important measure to prevent and mitigate welfare consequences is training of staff in correct procedures. Since castration is a painful procedure, keeping entire male pigs is a viable alternative if the welfare consequences for pen mates due to aggressiveness and mounting behaviour, are prevented or mitigated. From a welfare point of view, immunocastration has the advantages of less mounting behaviour, reduced number of skin lesions, penile injuries, and fewer locomotory disorders, although the method also has some welfare disadvantages. Tail docking should not be performed but prevented on the basis of a risk assessment analysis and with appropriate husbandry practices and management. If tail docking is performed under derogation, the following aspects minimise harm: dock at a young age, use a cautery method (instead of a cold method), and do not dock the tail close to the first caudal vertebra as it has larger impact on soft tissue, bone and nervous tissues.

Among the main risk factors for tail biting are space allowance, types of flooring, air quality, health status and diet composition, while weaning age was not associated directly with tail biting in later life. The relationship between the availability of space and growth rate, lying behaviour and tail biting in rearing pigs is quantified and presented. The provision of straw, hay, silage or other loose organic substrates is more effective in reducing tail biting than enrichment materials which are suspended from a ceiling or fixed to a wall. A reduction in tail biting can be achieved in undocked pigs if they are offered 20 g per day of straw or similar substrate. However, larger quantities (e.g. up to 400 g/pig per day) are more effective.

Finally, the Panel suggested a set of ABMs to use at slaughter for monitoring on-farm welfare of cull sows (body condition, carcass condemnation, shoulder ulcers and vulva lesions) and rearing pigs (tail lesions, carcass condemnation and lung lesions).

### 5.2.2. Recently published EFSA's scientific opinion on transport of domestic birds and rabbits.

Antonio Velarde, member of EFSA AHAW Panel and Chair of EFSA working group, presented the SO on animals transported in containers focussing on transport of domestic birds and rabbits. The species and categories of domestic birds assessed were mainly chickens for meat (broilers), end-of-lay hens, and day-old chicks. The relevant stages of transport considered are preparation, loading, journey, arrival and uncrating. Welfare consequences associated with current transport practices were identified for each stage. For each welfare consequence, ABMs and hazards were identified and assessed, and both preventive and corrective or mitigative measures proposed. Recommendations on quantitative criteria to prevent or mitigate welfare consequences are provided for microclimatic conditions,

space allowances and journey times for all categories of animals, where scientific evidence and expert opinion support such outcomes. For domestic birds: i. regarding space, the generic allometric equation 'space allowance (cm2) = 290 x live weight (kg2/3)' can be used to calculate the minimum required floor space during transport for most types of birds to adopt a sitting position and have the possibility to shuffle around; ii. regarding temperatures, the Apparent Equivalent Temperature (AET) combining dry-bulb temperature and relative humidity should be used: birds should be transported at SET value below 40; iii. the maximum journey duration including on-farm feed withdrawal should not exceed 12 hours (10 hours in case of end-of-lay hens). For day-old chicks: regarding temperatures, the upper limit is estimated to be 35°C and the lower limit at 30°C. Day-old chicks subject to feed and water withdrawal periods longer than 48 hours will be at risk of experiencing severe prolonged hunger and thirst which is detrimental to their welfare. For rabbits: regarding space, crate heights of 35 cm and 40 cm will respectively allow slaughter rabbits (up to 3 kg) and breeding rabbits (between 4.5 kg and 6 kg) to keep their ears erect in a natural position while sitting.

### 5.2.3. Recently published EFSA's scientific opinion on transport of free-moving animals.

Mette Herskin, a member of the EFSA AHAW Panel and Chair of EFSA free-moving transport working group gave a summary of the recently published (4) SOs dealing with the welfare of cattle, small ruminants, pigs and horses during transport.

Quite a few welfare consequences were identified as being highly relevant for the welfare of livestock during transport based on severity, duration, and frequency of occurrence. These included handling stress, heat stress, injuries, motion stress, prolonged hunger, and prolonged thirst. The occurrence of each type of welfare consequence varied depending on the stage (preparation, loading, transit, unloading and journey breaks), and duration of transport.

A wide variety of hazards were identified for the different welfare consequences and transport stages. These were related to factors such as inexperienced/untrained handlers, inappropriate handling, structural deficiencies of vehicles and facilities, poor driving and road conditions, insufficient space and unfavourable microclimatic (heat) conditions in the transport vehicles.

Despite its importance, no agreed scientific definition of the concept of fitness for transport currently exists.

Severe heat stress for livestock starts at the upper critical temperature (UCT). The UCT was presented for cattle, sheep horses and pigs. Animals should be transported within their thermal comfort zone and never exposed to temperatures above the UCT during transport.

Increased space in the vehicle with reference to the current space allowance is beneficial for the animals to adjust posture and balance in response to movements of the vehicle during transport thus reducing injuries, falls and stress. This allowance should also allow the animals to

rest including the space need to get up and lie down. Recommendations were given for a minimal space allowance for each of the species in question.

The number and the severity of hazards that animals are exposed to during transport influence the resultant welfare consequences. The amount of time the animals are exposed to the hazards is dependent on the journey duration. Motion stress and sensory overstimulation start as soon as a vehicle starts moving and continues while the vehicle is moving potentially leading to fatigue and negative affective states such as fear and distress. Pain and/or discomfort from health conditions or injuries can be severe and will worsen over time during transport and may lead to suffering. Problems associated with lack of resting become greater with increased journey duration and may lead to fatigue. EFSA therefore recommends that the duration of transport is kept to a minimum. Also, in an effort to support risk managers in setting a maximum journey time the onset of thirst (even when drinkers are provided), hunger and fatigue were presented.

Even when a transport vehicle is fitted with water drinkers, long journeys may result in prolonged thirst. Due to practical difficulties in feeding animals on a transport physiological changes indicative of hunger can be present. Allowing livestock a break on a stationary vehicle at the current commercial space allowance does not lead to the intended drinking, eating, and resting behaviour and thus does not mitigate the welfare consequences of the journey. Animals (apart from horses travelling in single stalls) should be unloaded to be fed watered and rested.

Welfare consequences at Control Posts (CPs) include handling stress, injuries, group stress, biosecurity risks, therefore the number of times animals stop there should be as low as possible. Groups of animals from trucks should be maintained at CPs. CPs may not fulfil their intended function. Journey breaks at CPs needs to be long enough for each animal to eat, drink and rest. Recommendations were made in relation to the minimum length of rest at control posts.

During the transport of un-weaned calves, intervals between milk meals should not exceed 12 hours, and not be less than 6 hours. After a milk meal, calves should be allowed to rest (lying) in a calm place for 3 hours to digest their meal. In order to allow calves to be loaded/unloaded and a 3-h post-meal rest, journeys should not exceed 8 h.

The recommendations made for road transport are equally applicable to cull animals (dairy cows and sows). Fitness for transport is of particular concern for this group of animals. If the cull animals are fit for transport, the journey to a slaughterhouse should be kept to a minimum, be direct and not involve any unloading and reloading at any interim premises. If these animals are not fit for transport and are without the prospect of recovery in a reasonable period of time, they should be killed on farm as soon as is possible.

### 5.2.4. Update on progress of other F2F scientific opinions (laying hens, broilers, ducks, geese & quails, calves, dairy cows).

Network representatives were given an overview and update on the F2F SOs that EFSA is producing:

Denise Candiani provided a general overview of the EC mandates received under the framework of the Farm to Fork (F2F) strategy and on their timelines. The F2F Strategy foresees a comprehensive evaluation of the current EU animal welfare legislation with the view to its possible revision and possible new legislative acts (e.g. on the protection of dairy cows, ducks, geese and quail). In preparation to that, and also in relation to the ECI 'End of the Cage Age', in June 2020 EFSA received five mandates from the EC, requesting a comprehensive and updated assessment of the scientific knowledge related to protection of calves, laying hens, pigs, broiler chickens and terrestrial animals during transport. Due to the complexity of the mandate on the protection of animals during transport (i.e. six animal categories to be considered, six group of practices to be described and seven specific scenarios to be further assessed), EFSA has addressed it by delivering five different SOs, four on free moving animals (sheep & goats, pigs, cattle, and horses) and the fifth on animals transported in containers (poultry & rabbits). In June 2021 and July 2021 respectively, EFSA has received two additional mandates: a) on the protection of ducks, geese and quail, and b) on the protection of dairy cows. The ongoing five SOs are scheduled for adoption by the AHAW Panel in the next months: December 2022 in the case of laying hens and broiler chickens, and March 2023 for calves, dairy cows and ducks, geese & quail. The F2F mandates present a similar structure with a set of General Terms of References (ToRs) (that are similar in the case of the mandates 'on farm') and additional specific scenarios (Specific ToRs) for which the EC has identified practical difficulties or insufficient information in ensuring the welfare of animals and requested EFSA to propose detailed quantitative or qualitative preventive, corrective and/or mitigation measures.

Michaela Hempen detailed the state of art of the draft SO on the welfare of laying hens in relation to the identification of the highly relevant welfare consequences and related ABMs in the identified and described husbandry systems for laying hens, pullets and layer breeders. Mandate Specific ToRs were also presented.

Cristina Rojo Gimeno, provided a similar overview detailing the state of development of the draft opinion on the welfare of broiler chickens, on the description of the animal categories and husbandry systems, the highly relevant welfare consequences and the related ABMs. It was specified that double purpose lines, great grandparents will be addressed, but data on great grandparents and pure lines kept in cage systems are often not accessible to scientists, and that promising husbandry systems (e.g. mobile systems) have been be also considered in the draft SO. Mandate specific scenarios were also presented.

Gizella Aboagye presented the mandate on the protection of ducks, geese and quail. This mandate stems from ECI 'End of the Cage Age', and it refers to animals used for farming purposes only. It was specified that the process of collecting feathers and downs, transport, slaughter and the process of force-feeding for fatty liver production are not part of this request. Background and ToRs were presented. Four animal species are assessed in the draft SO: Domestic duck, Muscovy duck (and hybrids), Domestic geese

and Japanese quail. These species are kept on farm for diverse purposes: breeding, production of meat (including foie gras, in the case of Muscovy ducks and Domestic geese), and production of eggs (mainly Japanese quail) and several animal categories are assessed, depending on the production purpose.

Mariana Aires presented the mandate on the protection of dairy cows. It was specified that it concerns cows which have had a calf and are kept for milk production and to pregnant heifers in the last third of gestation. The six ToRs were presented as well as an overview of prevalent husbandry systems for dairy cows in the EU Member States (relevant to ToR-1). A specific ToR of this mandate (in comparison to the others of the F2F mandates) asks EFSA to identify the herd-level variables that could be used to identify farms at risk of poor welfare and that could be used in a welfare monitoring system.

Eliana Lima provided an update on the draft SO on the welfare of calves with examples of the husbandry systems that are assessed in the SO. The presentation highlighted the ongoing Public Consultation on the sections of the draft SO containing results, conclusions and recommendations on welfare aspects of calves reared for white veal (specifically aspects related with space allowance, fibre and iron provision, and individual/group housing) and welfare aspects of limited cow-calf bond. Network representatives were invited to disseminate the call for comments and the link to the Public Consultation; deadline for submitting comments to the draft SO is 04 November 2022.

### 5.3. Ongoing work and reflections on the revision of the EU legislation on the protection of animals at the time of killing

Denis Simonin, senior expert from DG SANTE G5 Unit (EC), presented the ongoing options for the revision of Council Regulation (EC) No 1099/2009 on the protection of animals at the time of killing.

Background and general context were explained: the F2F Strategy, the Inception Impact Assessment with options on killing, published in July 2021, the Subgroup of the EU Platform for AW at the time of killing, which is in place from March 2022, and the Impact Assessment Study that will be completed by the end of 2022. The overall aim is to have legislative proposals on the protection of animals at the time of killing by 2023.

The options under study include provisions on the killing of farmed fish, on waterbath stunning for poultry, high concentration of $CO_2$ for pigs, pre-approval of stunning equipment, the use of electrical prods and on video surveillance. The species under consideration in the case of killing of farmed fish are salmon, trout, carp, seabass and seabream, on the following aspects: handling prior to stunning, competence of handlers, the monitoring of stunning and the pre-approval of the stunning equipment. Network members were informed that electric waterbath stunning for poultry and stunning with carbon dioxide at high concentrations for pigs might be subject to a progressive phase out. Related potential difficulties are under assessment and were highlighted; they include the use of head-only electrical stunning as alternative to stunning with $CO_2$ at high concentrations. It was also reported that a technical pre-assessment on animal welfare bases of the stunning equipment is under evaluation. This pre-approval might be required for

new slaughterhouses and be enforced either at a national or at EU level. A full ban of electrical prods is under consideration as well as targeted restrictions of their use. Finally, it was explained that the mandatory use of video surveillance is under examination for all slaughterhouses or limited to some of them.

During the Questions & Answers session, it was discussed the issue of high-speed chains, as cause of lack of monitoring and recovery of consciousness. It was stressed that, in certain circumstances, the speed of the chain can be so high that operators cannot apply the backup method to mis-stunned animals or to animals that have recovered consciousness. It was suggested that systematic checks can be put in place through automatic monitoring systems and video surveillance. On this topic, the EC representative remarked the lack of information on monitoring indicators at slaughter, e.g. on the number of animals that are mis-stunned.

It was explained that the legislative proposals will be both for the main body of the Regulation and the Annexes, will be based on the scientific evidence, e.g. on the welfare consequences affecting the animals, and will take into account also economical impacts on food business operators.

Legislative proposals will include provisions on killing of farmed fish; however, it was remarked that several challenges relate to fish stunning, such as the definition of the electrical parameters.

The Italian Network representative mentioned that they are starting a project where Competent Authorities will monitor and collect data on fish stunning. It was explained that percussive blow to the head is used for stunning of sturgeons.

It was reported that in Norway it is mandatory to stun farmed fish before bleeding, but the use of $CO_2$ is banned. For salmonids, they use 50% electric stunning and 50% non-penetrating captive bolt; however, both methods have challenges. Captive bolt works well if the hit is performed on the right spot.

Also in Sweden stunning of farmed fish is mandatory; however, $CO_2$ is still in use for rainbow trout and arctic char, but the use of electrical and mechanical stunning methods is also under development (e.g. electrical stunning for Clarias and Tilapia).

In Czech Republic, the use of $CO_2$ stunning in farmed fish was indirectly banned in 2020 by the amendment of the AW Act.

### 5.4. New mandate on the use of high expansion foam for stunning and killing pigs and poultry.

Marika Vitali provided an overview of the background and ToRs of the mandate.

In January 2022, the EC received a request from a Food Business Operator to allow the use of high expansion foam for stunning and killing pigs and poultry. The request was supported by a series of publications and technical information in order to obtain full assessment of the method.

EFSA was requested to assess to what extent the scientific and technical information provided gives enough evidence to allow its use and, in case of a favourable reply, under which conditions.

It was specified that the use of foam is currently not included in the Annex I of Council Regulation (EC) No 1099/2009 and that the proposed method regards

stunning and killing for other purposes than slaughter of pigs and poultry (including ducks, turkeys and pigeons).

Deadline for delivering the SO is December 2023.

In particular, EFSA will assess whether the proposed method and information provided with the application, meet the eligibility criteria of the EFSA Guidance on the assessment criteria for applications for new or modified stunning methods regarding animal protection at the time of killing (EFSA, 2018), and whether the proposed method can provide a level of animal welfare at least equivalent to that ensured by the existing methods in the legislation, i.e.:

- ensuring that pigs and poultry are spared of avoidable pain, distress or suffering during killing ,
- maintaining the loss of consciousness and sensibility until death of pigs and poultry.

On this topic, prior to the meeting, Network representatives were asked to provide information on on-farm killing of pigs and poultry in their countries on the basis of the following questions:
*Are you doing/have you done on-farm killing for poultry and/or pigs (in the last 5 years)? If yes, which methods have you used? In particular for gas methods (including foam), can you describe the main challenges in terms of animal welfare (e.g. regain of consciousness, painful induction loss of consciousness) that have you encountered in each method used?*
The questions were intended as support for the participants to prepare for the meeting, and for guiding the open discussion that followed the presentation. They were not intended for collecting official data or gathering info in a formal way, but just to structure the discussion and support the exchange of information. The complete feedback was collected in a questionnaire that, upon request of the meeting participants, will be distributed to the Network members, and published in a Technical report at the end of 2022.

During the Questions & Answers session, it was explained that with this method the animals are not killed by the foam itself, but by the gas that fills the foam. The method has been tested under experimental conditions in containers for pigs, hens and turkeys. Behavioural ABMs have been observed (e.g. loss of posture and convulsions) as well as neurological ABMs in single pigs and in few birds. It was explained that the procedure of stunning and killing with gas filled foam is similar to the one that can be observed when using gas methods (although it is much faster) with gasping and escape attempts as indicators, and reduced times to loss of posture and end of movements in the animals. However, the limitation consist in the difficulty to monitor the animals. It was reported that UK has some experience in using the method.

### 5.5. Exchange of information session among scientific NCPs Network members and plenary discussion with questions and answers

Request for information was sent to Network members prior to the meeting related to the following points (5.5.1 to 5.5.3) that were discussed at the meeting. The questions were intended as support for the participants to prepare for the meeting, and for guiding the open discussion that followed each presentation. They were not intended for collecting official data or gathering info in a formal way, but just to structure the discussion and support the exchange of information. The complete feedback was collected in a questionnaire that, upon request of the meeting

participants, will be distributed to the Network members, and published in a Technical report at the end of 2022.

### 5.5.1. Animal welfare risks of killing methods on farm.

Marien Gerritzen (scientific NCP representative from NL) presented the difficulties in assessing the killing methods when applied on-farm, due to the diverse categories that are killed (from young age to older age), the absence of inspectors when the method is applied, and the presence of dead animals at the time of inspection. It was also highlighted that there is lack of practical protocols for inspectors that could provide information on how the killing methods should be assessed, and which parameters should be used to test la legitimacy of the method.

On this topic, prior to the meeting, Network representatives were asked to provide information from their countries on the following questions:
*Do you have a risk assessment to determine the animal welfare impact of the killing of animals on farms by livestock farmers (in country/intra-EU; animal categories: pigs, cattle, goats/sheep, poultry)?*
*Do you have animal welfare issues related to the killing of animals by livestock farmers?*
*Do you have an assessment protocol to check the way livestock farmers are killing animals on farm?*

During the Questions & Answers session, it was discussed that instructions indicating when and how animals should be euthanised and bled would be beneficial. In several countries farmers are also hunters and owners of shotguns; in principle this could be of help. However, as general consideration, farmers tend to wait too long before intervening and to avoid killing their own animals (this is particularly evident in the case of cows). It was reported that in Italy there is a consistent training on this matter. In Denmark pig farmers, if they do not let the vet carry out euthanisation, must own a captive bolt for on-farm killing; whereas in the Netherlands, farmers prefer to use the non-penetrative captive bolt. When inspecting, the procedures should be assessed and the devices should be seen. Finally, it was emphasised that from the point of view of the Competent Authority, it would be interesting to collect data on the number of animals that were euthanised in comparison to the ones that died 'by their own'.

### 5.5.2. Who is the owner of a Certificate of Competence (CoC)?

Charlotte Berg (scientific NCP representative from SE) explained that foreign operators have been employed in Swedish slaughterhouses and most of them had the CoC issued by the Competent Authority of their home country. Some of these operators claimed to have a CoC, but were not able to show if because the previous employer had retained it in a different country.

On this topic, prior to the meeting, Network representatives were asked to provide information from their countries on the following questions: *The previous employer (FBO) probably paid for the training and examination of the workers, but do they then own the CoC? Isn't it linked to the person and not to the company? Was the intention of the EC that the workers*

*should get new training and a new exam at each workplace or in each country? If so, is this in line with the EU principle of free movement…? Has anybody else encountered this problem?*

During the Questions & Answers session, Network members agreed that the CoC is linked and owed by the operator and not by the FBO. It should be possible to produce duplicates of the CoC upon operator's request. It was reported that in Italy a centralised system for training the operators and issuing CoCs is in place and can be consulted online.

### 5.5.3. **Animal welfare risks of mobile killing/slaughter.**

Marien Gerritzen presented the issue of animals unfit for transport but fit for slaughter. Network members were informed that a pilot project with a mobile slaughterhouse unit (MSU) was carried out in the Netherlands in 2018-2019 to cull dairy cattle on farm. From 992 farms, 1934 animals were processed with MSU; the majority of these animals were lame. They were usually stunned and killed inside the MSU, and slaughtered at the slaughterhouse. The *ante-mortem* inspection was supervised by an Official Veterinarian and 9% of the animals had no access to the slaughter process. As results from *post-mortem* inspection, 2.4 % of animals resulted unsuitable for human consumption. There was a debate about safeguarding animal health, animal welfare, and food safety by using MSU. In 2020 it was produced a document on 'Advice from the Office for Risk Assessment & Research on the Mobile Slaughter Unit pilot project in the north of the Netherlands' providing a better set of work protocols and preconditions for the deployment of a MSU in the Netherlands. In 2021, a limited number of animals were allowed to be slaughtered on the farm of origin.

Comparing 'MSU' with the 'emergency slaughter', 'euthanasia' and 'routine transport but slaughter under high-risk group', it was concluded that there are lower risks for the welfare of individual animals, and absence of stress and pressure during transport and at the slaughterhouse. However, the risks of regaining consciousness and to be rejected in *ante-mortem* are higher. If suitable measures to control those risks are put in place, there can be a potential improvement on animal welfare compared to the current situation.

On this topic, prior to the meeting, Network representatives were asked to provide information from their countries on the following questions:
*Does your country use mobile slaughter facilities? If so, is this widely used in your country? If yes, what is your experience with respect to animal welfare? If yes, if animals are not allowed for killing/slaughter at the mobile facility (after AM inspection), what happens to the animal then?*

During the Questions & Answers session, it was clarified that this topic refers to mobile slaughterhouses rather than emergency slaughter. Most of EU MSs do not use MSUs, but some are planning to introduce some mobile units. In Norway, the largest slaughter company has the mobile slaughter plant as a service for its members. Using the MSU, the animals unfit for transport are stunned and killed on farm and the carcasses are then sent to the plant. However, killing animals on farm is used as an alternative and it has extra costs. It was mentioned that in the Flanders (BE) MSUs tend to be used for horses. In Catalonia (Spain) MSU is in place, but there is the

problem of reaching remote farmers. Finally, there is an increasing interest on the use of MSUs in those MSs where transport of live animals if phasing out.

## 6. Wrap-up and Closure of the scientific NCPs Network meeting

Next meeting will be held in 2023 (date to be fixed).