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ANIMAL BY-PRODUCTS IN CONTINGENCY PLANNING

The proceedings of a Nordic-Baltic mini-seminar on handling
of animal by-products and other products in relation to outbreaks
of serious transmissible diseases

8 – 9 May 2019, Tallinn, Estonia

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*Siri M. Løtvedt, Hanna Lounela, Maarja Kristian and
Jørgen M. Westergaard*

In memory of our friend and colleague Jørgen M. Westergaard

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The Nordic/Baltic Veterinary Contingency Group includes the Baltic states, Estonia, Latvia and Lithuania in the cooperation to further strengthen our capacity to withstand and handle threats against animal health

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Contents

Foreword.....	7
Summary	9
1. Introduction	11
2. Opening session	13
3. Abstracts.....	15
3.1 Session I: Animal by-products and survival of pathogens.....	15
3.2 Session II: Animal by-products and disease control.....	16
4. Workshops on foot-and-mouth disease, African swine fever and anthrax outbreaks.....	19
4.1 Objectives of the workshops	19
5. Results of the workshops	21
6. Observations and recommendations	23
6.1 Observations	23
6.2 Recommendations.....	24
7. Evaluation	25
Acknowledgements.....	27
Literature	29
Sammanfattning	31
Annexes	33

Foreword

In remembrance of Jørgen Westergaard 1936–2019.

Since the Nordic-Baltic veterinary contingency group started its work in 2006, Jørgen Westergaard has provided invaluable work with professional support and great inspiration for the veterinary emergency cooperation between the Nordic and Baltic countries.

We have all benefited greatly from Jørgen's immense wisdom, experience and passion for the veterinary field, as well as his extensive professional network.

Jørgen has also, because of his unique personality, and the desire to share his vast knowledge, meant a lot to each of us who worked with him. His energy, enthusiasm, patience and warmth inspired all of us and gave us the belief that things could succeed – and they did.

We are deeply grateful for all, that we have learned from Jørgen – and will do everything we can to continue the work in his spirit.

We dedicate this publication to the memory of Jørgen Westergaard.

Summary

The mini-seminar on Handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases organized by the Nordic-Baltic Veterinary Contingency Group (N-B VCG) was attended by 40 participants coming from 11 countries. The seminar addressed:

- the legislative aspects of handling animal by-products in general;
- the handling of animal by-products related to the eradication of outbreaks of foot-and-mouth disease (FMD), African swine fever (ASF) and anthrax;
- available methods and field experiences regarding handling, use and disposal of animal by-products.

The implementation of the mini-seminar was based on:

- a seminar session on animal by-products and survival of pathogens;
- a seminar session on animal by-products and disease control;
- workshops on control and eradication of FMD, ASF and anthrax.

The abstracts of the presentations given by invited speakers during the seminar sessions as well as the working documents presented by facilitators in charge of the workshops provided an excellent background for the exchange of views, which took place during workshops and plenary sessions. It was highlighted, how the level of risks to public and animal health by the many different animal by-products has been taken into consideration in the legislation. The seminar participants had the opportunity to discuss the handling of by-products derived from both farmed and wild animals, as well as other contagious materials, and plan the actions needed in the specific cases presented in the workshops.

The complexity of the animal by-product issue – definitions of animal by-products as well as their handling and use – related to maintaining a high health status at farm as well as regional and national level was found of considerable importance.

Resulting from the views expressed by the participants a total of five recommendations were adopted:

It is recommended that the Nordic Baltic Veterinary Contingency Group (N-B VCG) within the context of contingency planning enhance the development of comprehensive operational manuals.

It is recommended that the (N-B VCG) through workshops and other activities support and promote further sharing of standard operation procedures and practical

experiences important for optimal handling of animal by-products and other contagious materials from infected premises.

It is recommended that the N-B VCG during workshops, seminars and simulation exercises assist in highlighting the importance of the application of the appropriate by-product rules related to disease control and eradication.

It is recommended that the N-B VCG explore the possibility of sharing scenarios of simulation exercises in order to assist in preparing new exercises.

It is recommended that the N-B VCG within the context of contingency planning consider for future activities a workshop on biocides with focus on the use of biocides in relation to cleansing and disinfection after outbreaks of notifiable diseases.

1. Introduction

In May 2019 the Nordic-Baltic Veterinary Contingency Group arranged a mini-seminar in Tallinn, Estonia on handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases. Animal by-products are defined as entire bodies or part of animals, products of animal origin or other products obtained from animals, which are not intended for human consumption, excluding germinal products.

During outbreaks caused by infectious diseases, appropriate handling of animal by-products and other products contaminated by disease agents is of great importance in order to prevent the disease from spreading. These activities involve personnel from the competent veterinary authorities as well as from the livestock industry. Handling of animal by-products during outbreaks should be addressed in the contingency planning in order to ensure immediate and effective action in an outbreak.

The objectives of the mini-seminar included:

- introducing participants to handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases;
- exchange of views on how animal by-products should be handled during outbreaks and especially the interface between the animal by-product regulation and the legislation on prevention, control and eradication of animal diseases.

The target participants for the mini-seminar were personnel with special responsibilities in handling animal by-products and personnel working with animal health preparedness and contingency planning.

The implementation of the mini-seminar was based on:

- a seminar session on animal by-products and survival of pathogens;
- a seminar session on animal by-products and disease control;
- workshops on control and eradication of foot-and-mouth disease (FMD), African swine fever (ASF) and anthrax.

The full program of the mini-seminar is in Annex I.

2. Opening session

At the opening session the participants were welcomed by Dr. Siri Løtvedt, Norway, President of the Nordic-Baltic Veterinary Contingency Group (N-B VCG) and by Dr. Maarja Kristian, who represented the Estonian Veterinary and Food Board. Dr. Maarja Kristian expressed a warm welcome to all participants and wished for a successful seminar.

The speech given by Dr Siri Løtvedt is presented below.

Speech

I would like to welcome all of you to this Nordic-Baltic Mini-seminar on handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases. A special warm welcome to the speakers and facilitators in the seminar who are contributing to make this seminar possible. I will also like to thank the Estonian Food and Veterinary Board who are hosting this event.

The Nordic Baltic Veterinary Contingency Group was officially established in 2006 after an initiative from the Nordic Council of Ministers. The primary objective is to improve cooperation, communication and the exchange of information and experience between the veterinary authorities within the Nordic-Baltic region and on international level, in the context of contingency planning and during animal disease crises. The secondary objective is to increase awareness of epizootic diseases among professionals and stakeholders within the region, to identify areas of improvement in contingency planning and also to obtain and spread knowledge related to fighting infectious animal diseases.

In order to reach these goals, this group has arranged a number of activities over the years. These include international simulation exercises on epizootic diseases, seminars with invited speakers, expert meetings and regular meetings of the group, training activities and so on. And we will like to thank the Nordic Council of Ministers for the financial support that makes our activities possible. Later this year we are conducting a discussion based FMD exercise with focus on vaccination and depopulation of big holdings. In 2020 we are planning a new vector seminar. Since we had the last one, nearly ten years ago, the vector disease situation has changed. And in 2020 and 2021 we have a new project in cooperation with Professor Jens Fredrik Agger at Copenhagen University: an epidemiology course for veterinarians.

The N-B VCG consists of experts from veterinary authorities in the eight Nordic and Baltic countries and I will like to introduce them to you: From our host country today Maarja Kristian, Mara Uzule from Latvia, from Iceland comes Sigríður Gísladóttir, from Finland Hanna Lounela and from Lithuania Paulius Busauskas. Two members were not able to be here today: Anna Huda from Denmark and Thomas Svensson from Sweden. Last but not least our consultant Dr. Jørgen Westergaard who has been a key person for the N-B group from the very beginning.

Today and tomorrow we will focus on challenges we seldom try to solve in peacetime. But when the outbreak is a fact, we are forced to find a way to treat cadavers and other animal byproducts. So let us be active, work together, discuss and learn from each other.

3. Abstracts

3.1 Session I: Animal by-products and survival of pathogens

3.1.1 *Animal by-products – introduction and general overview*

Katrin Valgma, Veterinary and Food Board, Estonia

The presentation “Animal by-products – introduction and general overview” is to give the overview about the section of animal by products. The first part of the presentation is to clarify the definition of animal by-products / derived products and the related terms as farmed animal, wild animal, wild game, manure. During the second part of the presentation, the overview about the legislation regulates the subjects of animal by-products (ABP), the scope of ABP regulations (No 1069/2009 and No 142/2011) and the principles for categorisation of animal by-products will introduced. The presentation covers also the methods to be used for disposal and use of ABP – general method and derogations to use in the case of outbreaks. Final part of the presentation is lightly to discuss about the general conditions for transportations, labelling, traceability and trading in the scope of ABP regulations with the respect of some special rules in the case of special animal diseases.

3.1.2 *Survival of pathogens causing African swine fever, foot-and-mouth disease and anthrax in different types of products*

Eva Emmoth, PhD, Dept of Microbiology, National Veterinary Institute (SVA), Sweden

African swine fever virus, foot-and-mouth disease virus and *Bacillus anthracis* all cause serious transmissible animal diseases. Treatments used to inactivate such microorganisms include techniques based on chemical disinfection and heat inactivation. Both techniques require sufficient contact surface and time for inactivation. The effect of chemicals also depends for example on the temperature and presence of organic matter. The ability to survive in animal products, animal by-products and manure and to withstand inactivation vary between these microorganisms but also between strains. Methods used to evaluate persistence and inactivation/disinfection of these microorganisms must take these differences into account, as well as the effect of various product matrices. Available data concerning survival of the microorganisms in animal products, animal by-products, animal feed, and liquid and dry manure as well as examples of standards and methods for evaluation of inactivation/disinfection will be presented. Based on these data, conditions for safe treatments of the above mentioned materials could be suggested.

3.2 Session II: Animal by-products and disease control

3.2.1 *Animal diseases: legislation on implementation of control measures during outbreaks*

Jānis Altenburgs, Food and Veterinary Service, Latvia

The nature of the European Union legislation gives a general approach to application of measures in case of outbreaks of infectious animal diseases. Therefore Member States shall establish the procedures for action and measures to be taken during outbreaks of infectious diseases, which usually includes arrangements for the identification of affected areas, measures in affected areas, dispatching conditions of food and animal by-products, etc.

During previous years Latvia has gained a lot of practical experience dealing with African swine fever (ASF) outbreaks in domestic pigs and cases in wild boar population. Most of activities in this context are linked to the implementation of control measures determined by the Commission Implementation decision 2014/709/EU. This legislation provides a series of prohibitions and derogations applying to pigs, their products and animal by-products. These measures were adopted in 2014 and subsequently modified several times, both in terms of the nature of the measures and in terms of the type of area. An update of the measures is being carried out in view of simplifying the measures and adapting them to the current situation. Since the ASF has spread in the territories of several EU countries, not only the Baltic states, it is essential to establish clear and enforceable conditions for dispatching of food and animal by-products in all the Member States, at the same time minimizing the risk of spreading ASF virus with those products.

In order to ensure uniform approach to the implementation of legislation in relation to dispatching of food and animal by-products, the Food and Veterinary Service has developed guidance for inspectors and the stakeholders.

3.2.2 *How to handle bodies of animals after culling?*

Dr. Hanna Lounela, Senior veterinary officer, Finnish Food Authority, Finland

Culling of animals in order to prevent the spread of a transboundary animal disease, is a vital step controlling an epidemic. Planning the culling includes planning of carcass disposal. Disposal method chosen will depend at least on the disease in question, animal species and numbers involved, geographical area, available methods, capacity of different disposal options, animal by-product category, health and safety of workers, environmental factors and even time of the year.

Methods used for carcass disposal could include approved animal by-product (ABP) processing plant, burial or burning on site, authorized landfill and incinerations plants. ABP processing plants, which normally process carcasses, are often the best option also during an epidemic. However, capacity of the processing plant might be a limiting factor. Burial or burning carcasses on site are often prevented by environmental protection regulations. In addition, public opinion will often be against animal pyres. Landfills could be a better option for carcass burial, but environmental permits might restrict their use for this purpose. Waste incineration plants are often not planned for large items such as animal carcasses and they might not be able to handle infectious material safely unless they have a direct input option. However, plants processing risk waste, could be an option, if they are able to receive carcasses in bulk. Whichever method is used for disposal, special care should be placed on making sure that disease will not spread during loading, transport or the disposal process itself. Relevant regulations for transporting dangerous goods should be followed.

Carcass disposal should be included in contingency planning so that methods available in different scenarios are fully covered. Planning should include at least list of operators present in the country, their location, capacity, possibility of collecting and handling carcasses, possible restrictions for accepting carcasses as well as prevention of disease spread during transport and handling. It would be recommended to negotiate contracts or agreements with different operators already during peace time.

3.2.3 *Experiences from handling culled animals as a result of African swine fever (ASF)*

Dr. Maarja Kristian, Veterinary and Food Board, Estonia

In Estonia, African swine fever (ASF) outbreaks in domestic pigs have occurred during the years 2015–2017. During those years, we used different methods for handling culled animals in the small, medium and large farms with domestic pigs. We have found, that the most important is to find a proper way to dispose culled animals in the shortest possible time and the safest way. In Estonia we prefer and we have mainly used rendering plant for disposal, but in some cases we have buried the animals. It was very important to follow the biosecurity rules during the transport of the culled animals to the rendering plant, but also on burial at site with purpose to not to spread the disease. It has also been important to have a contract with the rendering plant to ensure that the company will transport and dispose the animals during the outbreak.

Our recommendation is that the preferred disposal method should be using the rendering plant, and if this is not possible, then alternatively the onsite burial has to be used.

4. Workshops on foot-and-mouth disease, African swine fever and anthrax outbreaks

4.1 Objectives of the workshops

Workshops were facilitated by Dr. Fred Landeg, UK (FMD), Dr. Maarja Kristian, Estonia (ASF) and Dr. Patrik Moström, Sweden (anthrax). For this part of the seminar the participants were divided into four groups based on their interests. Two of the groups worked on a scenario based on a foot-and-mouth disease (FMD) outbreak, one based on African swine fever (ASF) and one on anthrax. The facilitators had prepared scenarios beforehand. They introduced the scenarios and the objectives of the workshops to the groups and facilitated the work in each group. There was a chairperson chosen by the participants in each of the groups, who directed and summarized their work, as well as a secretary.

Objectives of the workshops were to get experts from different Nordic and Baltic countries to discuss and share views on application of relevant legislation, national contingency plans, operational manuals and experiences in handling animal by-products and other contaminated products in a given scenario. The groups were expected to compare different handling methods and assess the advantages and disadvantages of each method. In the end the group had to decide on one or several disposal methods for culled animals as well as preferred methods for handling animal products, feed, slurry or dry manure and pastures in the given situation. The members of the groups were encouraged to discuss whether some of the methods were not suitable or if they were even prohibited in some of the Nordic and Baltic countries. The groups were expected to summarize and present their findings in the plenary session.

The groups were given relevant EU legislation as well as other reading material as references. In addition, they were able to use the information provided by the lectures during the two sessions earlier in the mini-seminar.

4.1.1 Scenario on foot-and-mouth disease

The scenario was based on the outbreak of foot-and-mouth disease in the UK in 2007. Maps showing the transmission pathway supported by molecular epidemiology and the zones for intra-community trade were presented. A condensed timeline of events was given as well as some overall statistics for the outbreak. For the purpose of the workshop, details of a fictitious farm in the foot-and-mouth disease protection zone

was used. Although the location of the farm was fictitious, the data provided was “real world” data based on an actual farm in the UK. The plan of the farm was provided.

The group was also presented with a table showing the numbers of animals killed in the UK foot-and-mouth disease outbreak in 2001 and the reasons why they were killed. Because of prolonged areal movement restrictions, more animals were killed for animal welfare reasons than for disease control reasons. In addition to the tasks described in section 4.1., the group was asked to consider whether carcasses of the animals killed for welfare reasons should be handled differently from carcasses on premises confirmed with foot-and-mouth disease, and if so, how and why should they be treated differently. The group was also asked to discuss how meat from foot-and-mouth disease vaccinated ruminants and pigs are treated and why is there a difference between pigs and ruminants.

The full scenario is in the Annex III.

4.1.2 *Scenario on African swine fever*

The scenario was based on the African swine fever outbreak in Saaremaa in Estonia in the middle of summer 2017. In the beginning of the outbreak there were 14 dead pigs in the farm. The farm consists of 6 buildings, where the pigs are located. The piglets come from the other farm owned by the same owner. The fattening pigs are sent from the farm directly to the slaughterhouse (all in – all out principle). The aim of the exercise was to describe methods how to handle animal by products, farm cleaning and disinfection. Maps and pictures from the handling of the outbreak and animal by-products were also presented during the workshop (not included in the report).

The full scenario is in the Annex IV.

4.1.3 *Scenario on Anthrax*

The scenario was based on the anthrax outbreak in Omberg/Östergötland in Sweden in summer 2016. An overview of the outbreak showed 14 (13 confirmed) dead animals in 6 infected premises during approximately one month. Maps and pictures from the handling of the outbreak were also presented (not included in the report).

The full scenario is in the Annex V.

5. Results of the workshops

The groups discussed the presented scenarios in detail and listed different methods suitable for handling animal by-products and other contagious materials derived from infected premises. They assessed advantages and disadvantages of each method and noticed, that there were differences between countries, which methods were preferred in certain situations. These differences were based on local conditions and national legislation as well as other authorities involved. The full results of the foot-and-mouth groups are presented in the Annex VI, the African Swine fever group in Annex VII and the anthrax group in Annex VIII.

6. Observations and recommendations

6.1 Observations

The presentations given by invited speakers during the seminar sessions and working documents presented by facilitators in charge of the workshops were all very comprehensive and informative and provided an excellent background for the exchange of views, which took place during plenary sessions and group work. The seminar participants had the opportunity to discuss the handling of by-products derived from both farmed and wild animals as well as handling of other contagious materials from infected farms.

The following observations were made:

- The mini-seminar revealed, that the application of animal by-product rules may differ slightly from country to country;
- The exchange of views in the working groups showed that information on treatment of contaminated or potential contaminated materials such as feed and pastures is scarce in operational manuals;
- Controlling a disease outbreak is often faced with difficulties due to logistic or environmental conditions and due to shortage of financial or human resources. Handling of animal by-products may create special problems, that need to be addressed;
- A simulation exercise is an important tool for improving preparedness and should be regarded as an integral part of the animal disease emergency planning process at local, regional, national and international level. These exercises should include handling of animal by-products. Preparing an exercise requires resources and countries could benefit from each other's experiences in arranging exercises;
- Restocking of farms after the occurrence of outbreaks of infectious diseases such as ASF, FMD and anthrax calls a thorough cleansing and disinfection, where the disinfectant shall inactivate the disease-causing agent and take into consideration the type of materials to be contaminated. The exchange of views during the mini-seminar revealed the desire for additional information on biocides.

6.2 Recommendations

Resulting from the observations and the views expressed by the participants a total of five recommendations were adopted:

It is recommended that the Nordic Baltic Veterinary Contingency Group (N-B VCG) within the context of contingency planning enhance the development of comprehensive operational manuals.

It is recommended that the N-B VCG through workshops and other activities support and promote further sharing of standard operation procedures and practical experiences important for optimal handling of animal by-products and other contagious materials from infected premises.

It is recommended that the N-B VCG during workshops, seminars and simulation exercises assist in highlighting the importance of the application of the appropriate by-product rules related to disease control and eradication.

It is recommended that the N-B VCG explore the possibility of sharing scenarios of simulation exercises in order to assist in preparing new exercises.

It is recommended that the N-B VCG within the context of contingency planning consider for future activities a workshop on biocides with focus on the use of biocides in relation to cleansing and disinfection after outbreaks of notifiable diseases.

7. Evaluation

An evaluation form was given to all participants before the start of the mini-seminar. The form had three questions concerning the event and the activities of Nordic Baltic Veterinary Contingency Group (N-B VCG). The questions were:

1. What would you consider as the most valuable "Take home message" from the event?
2. What proposals do you have for future activities within the area of aspects of animal health contingency planning?
3. Any comments you find relevant for the future work of the Nordic Baltic Veterinary Contingency Group?

A total of 25 evaluation forms were completed. The completed evaluation forms showed that:

- participants had enjoyed the mini-seminar;
- participants received during sessions and workshops valuable information, which they can use in their future work;
- participants shared practical experiences in the discussions;
- new networks with focus on animal by-products were established;
- regarding proposals for the future activities, several participants suggested an event covering biocides as well as other workshops on related subjects such as culling, cleaning and disinfection and vector-borne diseases;
- concerning future work a good number suggested to continue the good work through workshops, seminars and simulation exercises.

Acknowledgements

The Nordic Baltic Veterinary Contingency group would like to express thanks to the Nordic Council of Ministers for political and financial support to veterinary contingency planning activities in the Nordic and Baltic countries.

A special thanks shall be addressed to Veterinary and Food Board, Estonia for the excellent assistance during the preparation and implementation of the seminar and for the great hospitality shown to all participants.

Literature

- Regulation (EC) No 1069/2009 laying down health rules as regards animal by-products and derived products not intended for human consumption <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02009R1069-20140101&qid=1557136743910&from=DA>
- Commission Regulation (EU) No 142/2011 implementing Regulation (EC) No. 1069/2009 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02011R0142-20190320&qid=1557137016603&from=DA>
- Regulation (EU) 2016/429 of the European Parliament and of the Council on transmissible animal diseases and amending and repealing certain acts in the area of animal health ("Animal Health Law") <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02016R0429-20160331&qid=1557137297202&from=DA>
- Council Directive 2003/85/EC on Community measures for the control of foot-and-mouth disease repealing Directive 85/511/EEC and Decision 89/531/EEC and 91/665/EEC and amending Directive 92/46/EEC <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0085-20180803&qid=1557137396849&from=DA>
- Council Directive 2002/60/EC laying down specific provisions for the control of African swine fever and amending Directive 92/119/EEC as regards Teschen disease and African swine fever <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02002L0060-20080903&qid=1557137510175&from=DA>
- Disposal of dead animals, OIE, Terrestrial animal health code, chapter 4.12, Twenty-seventh edition, 2018 http://www.rr-africa.oie.int/docspdf/en/Codes/en_csat-vol1.pdf
- Anthrax in humans and animals, Fourth Edition, WHO, FAO and OIE, 2008 <https://www.who.int/csr/resources/publications/AnthraxGuidelines2008/en/>
- Selected methods of animal carcass disposal, Sander, J. E *et al.*, JAVMA, Vol 220, No. 7, April 1, 2002 <https://avmajournals.avma.org/doi/abs/10.2460/javma.2002.220.1003>

Sammanfattning

Mini seminariet med rubriken "Handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases" som organiserades av Nordic Baltic Veterinary Contingency Group (NBVCG) genomfördes med 40 deltagare från 11 länder.

Seminariet tog upp följande frågeställningar:

- Juridiska aspekter på hanteringen av animaliska biprodukter (ABP) i allmänhet.
- Hanteringen av ABP vid bekämpning av Mul- och klövsjuka (FMD), Afrikansk svinpest (ASF) och Anthrax.
- Tillgängliga metoder och fälterfarenhet avseende hantering och kvittblivning av ABP.

Seminariets genomförande baserades på:

- Seminariedel om ABP och överlevnad av patogener.
- Seminariedel om ABP och sjukdomskontroll.
- Workshop om kontroll och bekämpning av FMD, ASF och Anthrax.

Sammanfattningar av presentationerna från inbjudna föreläsare och arbetsdokument från workshop ledarna, gav en bra bakgrund till diskussioner runt de synpunkter som kom fram under workshoparna och plenar sessionerna. Det synliggjordes hur riskerna förknippade med ABP för allmänheten och för djurhälsan har hanterats i lagstiftningen. Deltagarna fick möjlighet att diskutera hanteringen av biprodukter från såväl tamdjur som vilda djur, liksom annat smittfarligt material, och möjligheten att specifikt planera för de särskilda fall som presenterades på workshops.

Komplexiteten i frågan om ABP, såsom definitionen av ABP liksom hanteringen i relation till att bibehålla ett gott hälsoläge på såväl gårdsnivå som regionalt och nationellt, identifierades som särskilt betydelsefullt.

Med hjälp av synpunkter från deltagarna formulerades fem rekommendationer:

Det rekommenderas att NBVCG utifrån perspektivet beredskapsplanering, påskyndar utvecklingen av operativa manualer.

Det rekommenderas att NBVCG genom workshops och andra aktiviteter medverkar till ett fortsatt utbyte av *standard operating procedures* och praktisk erfarenhet för att kunna hantera ABP och annat smittfarligt avfall från kontaminerade anläggningar.

Det rekommenderas att NBVCG genom workshops, seminarier och simuleringsövningar medverkar till att synliggöra betydelsen av att tillämpa de ABP-regelverk som är tillämpliga för sjukdomskontroll och sjukdomsbekämpning.

Det rekommenderas att NBVCG utreder möjligheten av att dela scenarios från simuleringsövningar för att skapa underlag för planeringen av nya övningar.

Det rekommenderas att NBVCG, utifrån perspektivet beredskapsplanering, planerar för en workshop om biocider med fokus på användning för rengöring och desinfektion efter utbrott av epizootisk sjukdom.

Annexes

Annex I: Program

Program for Mini-seminar on handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases

Day 1

- 08:45 Registration.
- 09:00 Opening session.
- 09:10 Session I: Animal by-products and survival of pathogens.

Table 1: Session I: Animal by-products and survival of pathogens

No	Time	Duration	Chair: Chief Veterinary Officer, Estonia or his/her representative
1	09:10	40 min	<i>Animal by-products regulation</i> <i>Speaker: Katrin Valgma, Veterinary and Food Board, Estonia</i> • What is an animal by-product? • Legislation and definitions • Categorization of ABPs • Use and disposal of ABPs • Labeling and traceability of ABPs • Handling of ABPs related to outbreaks of a serious transmissible animal disease
2	09:50	40 min	<i>Survival of pathogens causing African swine fever, foot-and-mouth disease and anthrax in different type of products</i> <i>Speaker: Dr. Eva Emmoth, Sweden</i> • Survival of pathogens in animal products, animal by-products, animal feed. Liquid and dry manure • How to ensure safe treatments of products mentioned under (a)
	10:30		Questions and discussions related to session 1
	10:45		Coffee break

Table 2: Session II: Animal By-products and disease control

No	Time	Duration	Chair: Dr. Hanna Lounela, Finland
3	11:00	40 min	<i>Animal diseases: legislation on implementation of control measures during outbreaks</i> <i>Speaker Dr. Janis Altenburgs, Latvia</i> • Handling of animal products, animal by-products and other products • How can products be moved and traded during outbreaks of disease outbreaks: African swine fever, foot and mouth disease and anthrax • What are safe products during outbreaks of: African swine fever, foot-and-mouth disease and anthrax
4	11:40	40 min	<i>How to handle bodies of animals after culling?</i> <i>Speaker: Dr. Hanna Lounela, Finland</i> • Preparedness • Available methods • Practical aspects • Decision making
	12:20		Questions and exchange of views related to session 2
	12:30		Lunch
5	13:30	30 min	<i>Experiences from handling culled animals as a result of African swine fever (ASF)</i> <i>Speaker: Dr. Maarja Kristian, Estonia</i> • Handling of dead infected wild boar • Handling of culled pigs from ASF outbreaks in small, medium and large size farms with domestic pigs
	14:00		Questions and discussion related to session 2
	14:20		Coffee break

Table 3: Workshop: Disease outbreaks and handling of culled animals and contaminated products

Date	Time	FMD Facilitator: Dr. Fred Landeg, Former-CVO, UK	ASF Facilitator: Dr. Maarja Kristian, Estonia	Anthrax Facilitator: Dr. Patrik Moström, Sweden
8 May	15:00	Application of relevant legislation in handling of animal by-products and other products on an infected farm and in the zones established due to an FMD outbreak	Application of relevant legislation in handling of animal by-products and other products on an infected affected farm and in the zones established due to an ASF outbreak	Application of relevant legislation handling of animal by-products and other products on an infected farm and surrounding area
	18:00	End of Day 1	End of Day 1	End of Day 1
	19:00	Dinner	Dinner	Dinner
9 May	09:00	Continuation of activities in working groups	Continuation of activities in working groups	Continuation of activities in working groups
	10:30	Coffee	Coffee	Coffee
	11:00	Plenary session, presentations of group work	Plenary session, presentations of group work	Plenary session, presentations of group work
	12:15	Conclusions + recommendations	Conclusions + recommendations	Conclusions + recommendations
	12:30	Close of Mini-seminar	Close of Mini-seminar	Close of Mini-seminar

Annex II: Participants

The mini-seminar had 40 participants coming from different countries: Denmark, Estonia, the Faroe Islands, Finland, Greenland, Iceland, Latvia, Lithuania, Norway, Sweden and the United Kingdom. Information on the public administrations, organizations and private sectors represented at the seminar is shown in the table below.

Table 4: Public administrations, organizations and the private sector represented at the seminar

Country	National veterinary administrations, ministries	University and laboratories	Other	Total
Denmark	3		2	5
Estonia	5			5
Faroe Islands	2			2
Finland	5			5
Greenland	1			1
Iceland	2			2
Latvia	4			4
Lithuania	3			3
Norway	4	1	1	6
Sweden	4	2		6
The United Kingdom			1	1
<i>Total</i>	<i>33</i>	<i>3</i>	<i>4</i>	<i>40</i>

Annex III: Scenario on foot-and-mouth disease

The documents describe the outbreak of foot and mouth disease in the UK in 2007.

Copies of relevant EU legislation will be provided on a memory stick including the ten Commission Decisions concerning interim protection measures with regard to foot-and-mouth disease in the United Kingdom and made between 6 August 2007 and 13 December 2007.

Maps (not included here) show the transmission pathway supported by molecular epidemiology and the Zones for intra-community trade. The situation was complicated by outbreak of bluetongue at the same time. A condensed timeline of events is shown as are some overall statistics for the outbreak (not included here).

For the purpose of the workshop details are given of a fictitious farm in the foot and mouth disease protection zone. Although the location of the farm is fictitious the data provided are “real world” data based on an actual farm in the UK; a plan of the farm is also provided.

Workshop activities and questions to consider

Question 1

List the methods of disposal of carcasses from a premise with confirmed foot and mouth disease. Consider the advantages and disadvantages of each method and summarize this in a table with the preferred method at the top of the table to the least preferred method at the bottom. Are there some countries in the Nordic Baltic group where methods of disposal set out in the table are not practical or prohibited; list any with the reason(s) why?

Question 2

The table below shows the numbers of animals killed in the UK foot and mouth disease outbreak in 2001 and the reasons they were killed. It can be seen that because of prolonged area movement restrictions more animals were killed for animal welfare reasons than for disease control reasons. Are animals killed for welfare reasons and their carcasses treated differently from the animals and their carcasses on premises confirmed with foot and mouth disease, if so, how and why are they treated differently?

Table 5: Animals killed for disease control and welfare reasons, foot and mouth disease UK 2001

Type of animal	Infected Premises	DC* Contiguous	DC* non Contiguous	Slaughter on Suspicion	Welfare Reasons	Total
Pigs	22	50	68	3	306	449
Cattle	301	196	82	13	166	758
Sheep	968	991	1,360	109	1,821	5,249
Other	4	991	1,360	109	3	7
Total	1,295	1,237	1,510	125	2,296	6,463

Note: *DC = Dangerous Contact.
Other = Goats, Camillids.

Question 3

Blue Gates farm (see below) is a fictional premise, where foot-and-mouth disease was confirmed on 10 September. The data and system of husbandry is based on a real-world farm.

- All animals on the farm were killed by 15 September. At the time of killing there were 12,000 liters of milk in the 18,000-liter bulk tank. What should happen to this milk?
- There are two liquid slurry tanks on the farm (see below). How should this be treated during cleansing and disinfection (C&D)?
- Animals were still grazing two grass paddocks at the time of confirmation of disease. How should the pasture be treated during C&D?
- There are two silos containing concentrates. What should happen to the concentrates during C&D?

Question 4

Consider Article 55 of Council Directive 2003/85/EC. How is meat from foot and mouth disease vaccinated ruminants treated differently from meat from foot and mouth disease vaccinated pigs at this stage of vaccination. Why is there a difference between pigs and ruminants?

Table 6: Information about the infected farm

Name of holding	Blue Gates Farm (Fictional)
District	Surrey
Location	3 miles from Guildford Blue Gates – owned land (220 ha) Glebe Meadows – rented land (76 ha)
Name of Owner	BJ
Number of animals	Large dairy herd – 500 milking cows (in 2 groups 250 – spring calving cows / autumn calving cows) – closed herd Small beef unit – 30 intensively finished beef cattle Small sheep flock – No breeding ewes, but fatten up to 100 lambs from Ripley
Type of production	Dairy milk production: Average spring calver: 5,000 l/cow/year and autumn calver: 6,000 l/cow/year Production of beef – 30 finished bulls for slaughter Production of lamb – 100 lambs finished on silage aftermaths
Farming system	Artificial Insemination (and few sweeper bulls) Rear own-replacement Winter housing Rotational grazing
Feed	Obtained from two suppliers: Concentrates in the parlor, block silage (winter) and grass (summer) – maximize grassland (early turnout and late housing)
Liquid manure	Liquid manure is only used on site. Two storage silos 5,000 m ³ and 4,500 m ³ both less than 2/3 full
Trade	Milk (average spring calvers 5,000l/cow/year and autumn calvers 6,000l/cow/year); Beef and lambs for slaughter Male calves sold as 1 week old

Annex IV: Scenario on African swine fever

Table 7: Outbreak information

ASF suspicion date	10 July 2017
Number of pigs, age groups and estimated total weight of pigs	3,232 fattening pigs; total weight 237,570 kg
The farm is situated in the zone I, II or III according to the Commission Implementing Decision 2014/709	Zone II

On 10 July 2017 farm veterinarian announced to the Saaremaa Veterinary center that they have 14 dead pigs in the farm. In the same day the animal health specialist from the Saaremaa Veterinary center went to the farm and took the organ samples from the dead pigs and blood samples from the weaker pigs and sent to the Veterinary and Food Laboratory. At the same time county governor and ABP company were also informed about the ASF suspicion.

On 11 July 2017 at 8 o'clock Saaremaa veterinary center got an answer from the laboratory that the samples were ASF positive. The team from the University of Life Sciences arrived at the farm to carry out the epidemiological investigation to figure out the possible reasons how ASF could reached to the farm. Veterinary center team started to mark and block the farm, prepare the culling of the pigs and inform needed institutions.

Handling of animal by-products and other products on disease affected farm and in the zones established due to an ASF outbreak

The present farm is a fattening pig farm with 3,232 pigs in it, with total weight approximately 237,570 kg. The farm consists of 6 houses, where the pigs are located. The piglets come from the other farm owned by the same owner. The fattening pigs are sent from the farm directly to the slaughterhouse (all in – all out principle).

Nearby there are not any pig farms, but in the 10 km zone (approximately 8.5 km from the ASF positive farm) there is one pig farm with 4,045 pigs and this is owned by the same owner as the ASF positive farm.

Pigs are kept on the concrete floor with little sawdust.

There are 6 feed bins in the farm territory and in each there are approximately 500 kg of feed. The feed was bought from the feed company in Saaremaa (2–3 times per week).

The bedding is stored on the farm territory in the closed shed, at the moment there is about 500 kg of sawdust. The sawdust was brought the last time to the farm territory in July 2016.

The manure was collected in to the manure tank, which contain approximately 800 m³ of manure and that time the tank was almost full. The manure tank was emptied last time one week ago and it was sent to the biogas company as usually (once per week).

Questions for the discussion:

- List one or several disposal methods for culled animals. Consider the advantages and disadvantages of each method. Consider also how much time to you need for the different disposal methods and what are the critical points;
- Describe the methods how to handle animal products, feed, liquid and dry manure. How should bedding, feed in the bins and manure be treated? Consider also the farm cleansing and disinfection after the farm is depopulated.

Annex V: Scenario on anthrax

During the summer of 2016, an anthrax outbreak occurred in Omberg/Östergötland in Sweden. In total, six cows, five bulls, one horse, one sheep and three elk were killed by anthrax. A total of 3,269 animals (2,790 cattle, 47 sheep and 5 horse) were vaccinated against anthrax.

IP 1

This is a beef cattle herd (216), 7 of the animals were found dead on the pasture. One animal has undergone an autopsy and anthrax was confirmed. The animals are believed to have been infected by spores from soil on the pasture.

An animal owner found a dead cow on pasture. Next day, the breed bull was found dead also. The breeding bull transported to Karlskoga for autopsy. On 11 July, autopsy veterinarian reported suspected anthrax to the veterinary authority.

On 12 July, suspicion was confirmed anthrax. The same day a third animal was found dead on pasture. Animal number 4 died on 21 July, animal number 6 and 7 at this herd were dead on 26, 27 July, both of them had been vaccinated against anthrax on 24 July.

IP 2

Also, a beef cattle herd (140). An animal owner found a dead cow on pasture on 14 July, just 8 km from IP 1. On 15 July it was confirmed that the cow died of anthrax.

IP 3

On 27 July found one dead horse (14 years old) and four lambs on pasture. The horse was confirmed with anthrax, the four lambs were negative.

IP 4

On 30 July found a dead cow at the pasture, which was confirmed on 31 July.

IP 5

A bull and moose were confirmed on 2 August.

IP 6

One sheep dead at the pasture on August 6, which was confirmed Anthrax.

Table 8: Information about the infected premises

IP Nr	Start	Species	Production line	Number of dead animals (mortality)
IP 1	6/7	Cattle	Beef cattle	7 (6 confirmed)
IP 2	15/7	Cattle	Beef cattle	1 confirmed
IP 3	27/7	Horse		1 confirmed
IP 4	30/7	Cattle	Beef cattle	2 confirmed
IP 5	1/8	Cattle	Beef cattle	1 confirmed
	1/8	Moose	Wild	1 confirmed
IP 6	9/8	Sheep		1 confirmed
Total				14 (13 confirmed)

Questions

- List one or several disposal methods for culled animals with confirmed anthrax. Consider the advantages and disadvantages of each method and summarize this in a table with the preferred method at the top of the table to the least preferred method at the bottom. Are there some countries in the Nordic Baltic group where methods of disposal set out in the table are not practical or prohibited; list any with the reason(s) why?
- List the methods to handle animal products, feed, liquid manure and dry manure contaminated or potential contaminated with anthrax spores and bacteria.

Annex VI: Results from foot-and-mouth disease group

Question 1 – Available methods for handling animal by-products, their advantages and disadvantages

Table 9: Workshop results for foot and mouth disease, questions 1, group 1

Method	Advantages	Disadvantages
Transport to rendering plant for destruction	Ideal way of disposal, ensures complete destruction, have experience and equipment	Distance, capacity, transport route, possibility of spread during transport <i>No rendering plant available</i>
Burial on-site	No transport needed, equipment on-site (big farms), maybe price, possible to bury large amounts in short time	Availability and approval of site (environmental concerns), monitoring required for years, drainage systems, fencing, pre-treatment of carcasses needed <i>Terrain not suitable for burying</i>
Burial on landfill / other location	Site approved, experienced personnel, equipment available drainage, wastewater monitoring in place (landfill)	In addition to on-site burial: Availability of sites, public opinion, transport
Burning on-site / mobile incineration plant	No transport In small scale a viable option	Expensive, public opinion, serious environmental concerns, labour intensive. Correct "recipe" <i>No material for burning (pyre)</i>

Question 2 – Differences in treatment of animals killed for welfare reasons?

- Derogations can be granted for transport of live animals within the protection and surveillance zones for slaughter to human consumption:
 - Meat placed on the market must undergo treatments specified in Annex V of EC (2003/85);
 - Pet food must be treated according to Annex XIII.
- If a healthy animal is killed on farm, it cannot be put on the market (human nor pet). However, this does not affect the ABP category of the carcass, it will be the same as of the carcass of an infected animal;

- Animals can be slaughtered on farm for domestic use.

Question 3 – Treatment of different materials

Question 3 (I) Disposal of milk

- All products and substances referred to in Article (3) (c) shall be isolated until contamination can be ruled out, or treated in accordance with the instructions of the official veterinarian in such a way as to ensure the destruction of any foot-and-mouth disease virus, or processed;
- 3,000,000 liters of space in the slurry silos. Transfer of milk into silos, let stand according to Annex IV in Directive;
- Art. 14 of 1069 allow spreading of milk to the ground, if CA decides that this does not create a risk of spreads of disease. If milk is decided to be disinfected according to Annex IX, could an option.

Question 3 (II) – What to do with slurry

Directive Annex IV:

The liquid phase of manure and slurry should *be stored for at least 42 days* after the last addition of infective material. This period may be extended if the slurry has been heavily contaminated or during adverse weather conditions. This period may be shortened if disinfectants have been added so as to alter the pH sufficiently throughout the substance to destroy the foot-and-mouth disease virus.

Question 3 (III) – Pastures

- No direct instructions in Directive Annex IV;
- According to research, FMD can persist in the environment for even up to 364 days (laboratory conditions), up to 74 d in pasture;
- However, weather conditions will affect the survival and the viral load significantly;
- Taking these into account, pasture should be left unused for 6–7 weeks in summertime (UK protocol) for up to 6 months (later autumn – winter in Nordic countries).

Question 3 (IV) – Feed

- Feed silos are not located in heavily contaminated area;
- Risk assessment:
 - Sampling of feed for presence of FMDV (may not be necessary);
 - Has there been traffic of feed (i.e. refill of silos) during the probable FMD introduction period?
- Handling of concentrates in silos during C&D – Probably can be left as – is and used after restocking.

Question 4 – Requirements for treatment of meat

- Ruminants can become carriers of FMDV for up to 3.5 years (cattle) and to 9 months (small ruminants):
 - Although there is no evidence that domestic carrier animals play a role as source of infection;
 - These time periods have high confidence.
- Pigs, however, do not become carriers, thus these precautions are not necessary.

Question 1 – Available methods for handling animal by-products, their advantages and disadvantages

Table 10: Workshop results for foot and mouth disease, question 1, group 2

Methods for carcass disposal	Comments	Pros (+) and cons (-)
Industrial incineration/ co-incineration	The plant may have approved transports/drivers	+ Capacity for larger units – Transport always a risk – May disturb standard production
Rendering in an approved plant	The plant may have approved transports/drivers	+ Capacity for larger units – May not be able to handle whole animals, may disturb standard production, transport always a risk
Authorized landfill burial	The plant may have approved transports/drivers	+ May have capacity for larger units, may be fastest alternative – May not accept, transport always a risk
Burial on the spot	Requires special equipment for digging	+ Minimized risk of spreading the agent, may be fastest alternative, no transport needed, preferable in small farms – Not suitable in all areas due to ground water or thin soil layer
Use of mobile incineration facility	Not used in larger outbreaks – no capacity	+ Minimized risk of spreading the agent, may be good complement, preferable as no transport needed – Very low capacity
Burning on the spot	Requires special equipment, extra manpower and prepared ground. If designated area, transport is needed incl. approval and education etc.	+ Minimized risk of spreading the agent – Environmentally not good

Question 2 – What to do with animals killed for welfare reasons?

- No commercial value as food animals, but are of food quality;
- Healthy animals may be moved to be killed (i.e. in slaughterhouse);
- CAT III – May be used accordingly; but will not have access to the food chain.

Question 3 – Blue gates farm – What to do with products

- *Milk*: Sterilization/lowered pH (annex ix, part A and B of Directive 2003/85) (on spot) if transport, authorization required (Art 5.2);
- *Liquid slurry*: Storage 42 d or disinfection (annex IV, point 3);

- *Pasture*: Chain harrowing if possible, < 1 year without susceptible animals (annex IV, 4.1);
- *Concentrates*: If needed (bottom part): Incineration or burying, (art): Incineration or burying.

Question 4 – Treatment of meat from vaccinated ruminants compared to meat from vaccinated pigs? Why is there a difference?

Cattle have carrier state for up to (+ 22) months, sheep/goats some weeks (African buffalo are known to maintain the disease). Pigs have no known carrier state.

Annex VII: Results from African swine fever group

Handling of carcasses

Disposal method – Rendering

- *Advantages*: Clean no environmental problems, no public problems;
- *Disadvantages*: Plant capacity, transportation capacity, weather conditions (ferry), rendering category 2 plants do not want to take material due reputation loss and job, and due to cleaning and disinfection (CA can force them to take the material), logistic and capacity problems due to the amount of normal cat 1 and 2 material, we need to store this material for a while;
- *Time*: Approximate 4 days (75 tons a day);
- *Critical points*: The working conditions of the whole process and the capacity of the plant, such as the operation of the ferry and trucks.

Disposal method – Burning on the site

- *Advantages*: Shorter distances and transports, less risk of spreading disease;
- *Disadvantages*: Risk of fire, lot of tourists in the summer, problems due to lack of sites (small islands), environmental problem such as smoke, the local population and bad publicity, not enough fuel (wood);
- *Time*: Approximate 3 days;
- *Critical points*: Acceptance and approval of the public and environmental competent authority (CA).

Disposal method – Landfill

- *Advantages*: Large amounts may be buried, facilities on plant, no public people, low risk spreading the disease if correctly buried;
- *Disadvantages*: The operators do not want to take in the material, expensive (cost of lot), operators losing reputation and loose customers, biosecurity measures

before the material is properly buried, and the workers are not used to work with contagious material;

- *Critical points:* Problem with the acceptance of the material, biosecurity measures.

Disposal method – Burial on site

- *Advantages:* Shorter distances and transports, less risk of spread of disease, technical and practical easy, fast, crush instead of cutting to avoid gas, fenced area many people work;
- *Disadvantages:* Rocky surface on many places on the island, ground water protection. Gas problems, bad PR, take time to sink before cover with soil, environmental authority may not allow;
- *Time:* Approximately 2 days and the 2 weeks following up;
- *Critical points:* Acceptance and approval of the public and environmental CA.

Handling of other by-products and other material

Animal products, feed, bedding material

- Animal origin products (meat, meat products): rendering plant;
- Feed and bedding material: burn, buried or stored in closed container before.

Manure and slurry

- *Manure* according to annex II in 2002/60/EC: Store it for 60 days in the manure tank. Biogas plant does not have a hygienization step at 70 degrees, too low temperature 40 degrees at the biogas plant;
- *Slurry:* Store according to guidelines at least 60 days, storage facilities is a problem;
- *Critical points:* Room for storage.

Cleaning and disinfection

- CA or contract with company;
- *Cleaning:* Preliminary disinfection, cleaning, disinfection, wait 70 days;
- Training, biosecurity for company, who is planning? The CA plan, contingency plans;
- Water and detergents, for cleaning if possible collect water to manure tank. Otherwise leave to dry. Lime on the grounds, no scrape off;
- *Time:* 1 month for washing disinfection, 3 days disinfection, 3 months in total;
- *Critical points:* What to do with washing water, choosing effective disinfection agent.

Annex VIII: Results from anthrax group

Available methods for handling animal by-products, their advantages and disadvantages.

Table 11: Workshop results for anthrax group, carcass disposal

Disposal methods for carcasses	Advantages	Disadvantages
Incineration in the Hurikan 1,000	No transport or very little transport, pathogen is no longer viable, can also burn non-animal material	Low capacity, expenses, needs decent roads, in many countries not available
Rendering plant	Pathogen is no longer viable, all the processes are under control	Needs transport only for this outbreak not for other ABP, cleaning and disinfection of the transport vehicle
Burning on spot	No transport or very little transport, pathogen is no longer viable, can also burn non-animal material	Needs dry surroundings, depends on weather conditions, air pollution, complaints from the local people
Formalin treatment	No transport, pathogen is no longer viable	Time consuming, health and safety concerns, illegal?
Burial on landfill	Have the equipment for burial, control for the process	Needs transport, pathogen can survive a lot of years
Burial	No transport or very little transport?	Pathogen can survive a lot of years, equipment for digging

Burning on the spot – prohibited in Lithuania, the options are rendering plant or burial.

Burning on the spot, burial are the only options for Greenland and for Faroe Islands.

Table 12: Workshop results for anthrax group, disposal of other materials

Animal products/feed/liquid manure/dry manure	Methods
Milk	Cooling and pasteurization, case to case based
Feedstuffs	Incineration, immersion in formalin
Liquid manure	Incineration, immersion in formalin
Dry manure	Incineration, immersion in formalin
Wool, hair, hides	Soda and formaldehyde solution
Soil	Depends on outbreak, treatment of the soil and vaccination of the animals
Vegetation	Disinfection and then incineration



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ANIMAL BY-PRODUCTS IN CONTINGENCY PLANNING

Veterinary contingency planning in the Nordic-Baltic countries aims to prepare national veterinary administrations and stakeholders to respond speedily and effectively to emergency situations caused by contagious animal diseases. Such diseases may have a disastrous impact on the livelihood of people working in the livestock sector and related industries. The Nordic and Baltic countries have by large adopted very similar guidelines for the development of animal health contingency plans; guidelines based on the four pillars: disease prevention, preparatory arrangements, response and recovery. This report contains information on the conduct of a Nordic-Baltic mini-seminar on the handling of animal by-products and other products in relation to outbreaks of serious transmissible diseases.