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KICK-OFF MEETING
FOR THE REVIEW OF THE
BEST AVAILABLE TECHNIQUES (BAT)
REFERENCE DOCUMENT FOR
THE SLAUGHTERHOUSES AND ANIMAL BY-PRODUCT
INDUSTRIES

SEVILLE, 25 – 28 June 2019

MEETING REPORT

Acronyms used in this Report

General acronyms – Definitions

Acronym	Meaning
AOX	Adsorbable organically bound halogens
ABP	Animal by-product(s)
BAT	Best Available Techniques (as defined in Article 3(10) of the IED)
BAT-AEL	Emission level associated with the BAT (as defined in Article 3(13) of the IED)
BAT-AEPL	BAT-associated environmental performance level (as described in Section 3.3 of Commission Implementing Decision 2012/119/EU). BAT-AEPLs include BAT-AELs.
BATIS	BAT Information System
BOD	Biochemical oxygen demand
BP	Background Paper highlighting the items to be discussed at the Kick-off Meeting and sent to the SA TWG members on 8 May 2019
BREF	BAT reference document (as defined in Article 3(11) of the IED)
COD	Chemical oxygen demand
DG ENV	Directorate-General for Environment of the European Commission
EEA	European Economic Area
EIPPCB	European IPPC Bureau, in the Commission's Joint Research Centre
ELV	Emission limit value
EN	European Standard adopted by CEN (European Committee for Standardisation, from its French name Comité Européen de Normalisation)
ENE BREF	BAT Reference Document for Energy Efficiency
E-PRTR	European Pollutant Release and Transfer Register
EU	European Union
FDM BREF	BAT Reference Document in the Food, Drink and Milk Industries
GWP	Global warming potential
HCFC	Hydrochlorofluorocarbons
HFC	Hydrofluorocarbons
ICS BREF	BAT Reference Document on Industrial Cooling Systems
IED	Industrial Emissions Directive (2010/75/EU)
IPs	Initial positions
IPPC	Integrated Pollution Prevention and Control
IRPP BREF	BAT Reference Document for Intensive Rearing of Poultry or Pigs
KEI	Key environmental issue
KoM	Kick-off Meeting
LCP BREF	BAT Reference Document for Large Combustion Plants
MCP	Medium Combustion Plants (as defined in Directive (EU) 2015/2193)
MS	Member State(s)
NH ₃	Ammonia
ODP	Ozone depletion potential
ODS	Ozone-depleting substances
ROM REF	JRC Reference Report on Monitoring of Emissions to Air and Water from IED installations
SA BREF	BAT Reference Document for the Slaughterhouses and Animal By-product Industries
SA installations	Installations covered by the scope of the SA BREF
TN	Total nitrogen includes free ammonia and ammonium nitrogen (NH ₄ -N), nitrite nitrogen (NO ₂ -N), nitrate nitrogen (NO ₃ -N) and organically bound nitrogen
TOC	Total organic carbon (in water)
TP	Total phosphorus, expressed as P, includes all inorganic and organic phosphorus compounds, dissolved or bound to particles
TSS	Total suspended solids
TVOC	Total volatile organic carbon (in air)
TWG	Technical Working Group
VOC	Volatile organic compound (as defined in Article 3(45) of the IED)

WI BREF	BAT Reference Document on Waste Incineration
WT BREF	BAT Reference Document for Waste Treatment
WWTP	Waste water treatment plant

Participants in the Kick-off Meeting

Acronym	Meaning	Number of delegates in the Kick-off Meeting
Member States		
AT	Austria	1
BE	Belgium	2
CZ	Czech Republic	2
DE	Germany	3
DK	Denmark	3
ES	Spain	3
FI	Finland	2
FR	France	4
IE	Ireland	1
IT	Italy	2
SE	Sweden	2
UK	United Kingdom	2
Environmental organisation		
EEB	European Environmental Bureau	1
Industry organisations		
AVEC	Association of Poultry Processors and Poultry Trade in the EU countries	2
CEFIC	European Chemical Industry Council	4
CLITRAVI	Liaison Centre for the Meat Processing Industry in the European Union	2
COTANCE	European Confederation of the Leather Industry	1
EBA	European Biogas Association	1
ECN	European Compost Network	1
EFPRA	European Fat Processors and Renderers Association	3
EUfishmeal	European Fishmeal and Fish Oil Producers	3
ORGALIME	European Engineering Industries Association	1
UECBV	European Livestock and Meat Trading Union	6
European Commission		
DG ENV	Directorate-General for Environment	1
DG JRC - EIPPCB	Directorate-General Joint Research Centre - European IPPC Bureau	7
		Total: 60

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1 INTRODUCTION

1.1 Kick-off Meeting for the review of the SA BREF

The Technical Working Group (TWG) for the review of the Reference Document on Best Available Techniques (BAT) for the Slaughterhouses and Animal By-Product Industries (SA BREF) held its first plenary meeting at the JRC premises in Seville, Spain, on 25 - 28 June 2019. This report is a summary of this first meeting (also referred to as the Kick-off Meeting or KoM).

TWGs are set up to facilitate the exchange of information under Article 13(1) of Directive 2010/75/EU (IED) on Industrial Emissions (Integrated Pollution Prevention and Control).

The review of the SA BREF started with the activation of the TWG in July 2018. The SA TWG is made up of more than 150 experts representing EU Member States (MS), industry, environmental non-governmental organisations and the European Commission.

The call for the expression of TWG members' initial positions for the review of the SA BREF was sent out by the European IPPC Bureau (EIPPCB) on 17 December 2018, with a deadline for responses of 15 February 2019. Responses were received from 15 Member States, 8 industry organisations and 1 EEA country.

In order to facilitate the discussions at the Kick-off Meeting, a Background Paper (BP) highlighting the items to be discussed was prepared by the EIPPCB and sent to the SA TWG members 6 weeks in advance of the meeting, on 8 May 2019. The term 'EIPPCB proposal' used in the present document refers to the way forward that the EIPPCB proposed to the TWG in the BP after taking into account the TWG members' 'initial positions'. The Kick-off Meeting was attended by 60 TWG members (27 from MS, 24 from industry, 1 from an environmental organisation and 8 from the European Commission).

The meeting started on Tuesday 25 June 2019 in the morning and finished on Friday 28 June 2019 at midday (i.e. the meeting lasted three and a half days). The meeting agenda included presentations and discussions on the exchange of information for the review of the SA BREF (as provided for in Article 13 of Directive 2010/75/EU).

A senior official of the EIPPCB chaired the meeting and the SA BREF co-authors (i.e. the SA BREF team of the EIPPCB) introduced each topic and led the technical discussions.

During the meeting, discussions were held on the TWG members' initial positions and on the EIPPCB proposals that were based on those initial positions. The key issues for which agreements were sought at the meeting were the scope of the revised SA BREF, the interface with other BREFs, the structure of the revised SA BREF, the key environmental issues (KEIs), the data collection and the next steps for the review of the SA BREF.

The items were discussed following a common pattern at the meeting. The EIPPCB gave a presentation based on the Background Paper for each issue and proposed a way forward. The participants then had the opportunity to discuss each issue and to ultimately reach a conclusion by consensus.

This document presents the main issues discussed for each item and the conclusions reached at the meeting by the TWG.

All presentations given at the meeting are available to TWG members on the BAT Information System (BATIS) workspace together with the conclusion slides of the meeting.

1.2 Introductory presentations at the Kick-off Meeting

The presentation given by a representative of the Directorate-General for Environment of the European Commission (DG ENV) recalled the overall context and legal framework of the SA BREF review as well as the need to focus the information exchange.

The presentation also mentioned two ongoing studies which have been commissioned by DG ENV and which are of interest for the review of the SA BREF: one study about the preliminary identification of key environmental issues (KEIs) for the review of the SA BREF and another study for the identification and promotion of novel and emerging sustainable techniques (the so-called Innovation Observatory).

A member of the EIPPCB gave a general introduction to the *Sevilla process* (i.e. the process to draw up and review BREFs) including the general approach for deriving BAT and BAT-associated emission levels (BAT-AELs). It was made clear in particular that deriving BAT and BAT-AELs is a pragmatic and iterative process involving the whole TWG. In this process, the EIPPCB's responsibility is to make concrete proposals on BAT and BAT-AELs to the whole TWG based on the information collected, especially based on the plant-specific data collected through questionnaires. The TWG is invited to comment on these proposals and to submit any evidence supporting alternative proposals. Decisions on BAT are taken by consensus by the whole TWG at the Final TWG Meeting.

The work of the SA TWG will follow the BREF Guidance for the exchange of information under the IED (i.e. Commission Implementing Decision 2012/119/EU of 10 February 2012).

2 SCOPE

2.1 Overview

In the BP, the EIPPCB had proposed to include in the scope of the SA BREF, under the activity described in point 6.5 of IED Annex I, the production of primary products from animal by-products (ABP), such as rendering and fat melting, fishmeal and fish oil production, blood processing and gelatine manufacturing.

There was a TWG consensus to include such an indicative list of activities linked to the processing of ABP. However, three MS and three industry organisations requested to make a link between some of these activities (e.g. fat melting, blood processing and gelatine manufacturing) and the processing of edible co-products intended for human consumption. Moreover, it was stated that the processing of these edible co-products is permitted in some MS under point 6.4 (b) of IED Annex I. The inclusion of the appropriate IED Annex I activities connected to the indicative list of activities was largely debated and agreed, to avoid overlaps with the scope of other BREFs (e.g. FDM BREF).

In addition, one industry organisation requested to include in the scope of the SA BREF the preservation of hides and skins, since it can be carried out either in slaughterhouses or in ABP installations. One MS also requested to include feather processing in the scope of the SA BREF. The wording "production of primary products" was considered unclear by the TWG.

Conclusions reached by the TWG:

- To include in the scope of the SA BREF the following activities specified in Annex I to Directive 2010/75/EU:
 - 6.4. (a) Operating slaughterhouses with a carcass production capacity greater than 50 tonnes per day.
 - 6.5 Disposal or recycling of animal carcasses or animal waste with a treatment capacity exceeding 10 tonnes per day.
- To include in the scope of the SA BREF, under IED Annex I point 6.5 or 6.4 (b) activities, the processing of animal by-products and/or edible co-products, such as rendering and fat melting, feather processing, fishmeal and fish oil production, blood processing and gelatine manufacturing.
- To include in the scope of the SA BREF, under IED Annex I point 6.4 (a) or 6.5 activities, the preservation of hides and skins.

2.2 Interface with other BREFs

2.2.1 Interface with the FDM BREF

In the BP, the EIPPCB had proposed to be consistent with the FDM BREF and to mirror the FDM BREF scope in relation to its interface with the SA BREF, namely: to exclude from the scope of the SA BREF the treatment and processing of animal materials for the production of food after the making of standard cuts for large animals and of cuts for poultry.

Two MS mentioned potential overlaps in relation to the data assessment of installations falling under the scopes of both the FDM and SA BREFs. Two MS and one industry organisation asked for the inclusion of poultry deboning in the scope of the SA BREF and the TWG agreed that this could be considered an activity that is directly associated to a poultry

slaughterhouse. One MS pointed out that the interface with the scope of the FDM BREF is relevant only for slaughterhouses.

Conclusions reached by the TWG:

- To exclude from the scope of the SA BREF the treatment and processing of animal materials in slaughterhouses for the production of food after the making of standard cuts for large animals or of cuts for poultry.

2.2.2 Interface with the LCP BREF/MCP Directive

In the BP, the EIPPCB had proposed to exclude from the scope of the SA BREF any type of combustion installation that is covered by the LCP BREF or the MCP Directive.

The TWG members largely expressed the opinion that, due to special conditions (e.g. nature of the combusted materials), combustion plants using animal fat or meat-and-bone meal as a fuel should be under the scope of the SA BREF. The same rationale was considered to be applicable for combustion plants that are used for the burning of malodorous gases. There was a consensus to collect data from these plants and to possibly complement what is included in the LCP BREF or the MCP Directive (e.g. with respect to TVOC emissions to air).

Conclusions reached by the TWG:

- To include in the scope of the SA BREF the combustion of meat-and-bone meal and of animal fat.
- To include in the scope of the SA BREF the burning of malodorous gases including non-condensable gases (e.g. in thermal oxidisers or steam boilers).
- To exclude from the scope of the SA BREF other on-site combustion plants generating hot gases that are not used for direct contact heating, drying or any other treatment of objects or materials.

2.2.3 Interface with the WT BREF

In the BP, the EIPPCB had proposed to include anaerobic digestion and composting of ABP in the scope of the SA BREF due to their connection with SA activities. Three MS and two industry organisations initially disagreed with the proposal, arguing that the WT BREF is the proper framework for these activities. On the other hand, four MS and one environmental organisation were of the opinion that these activities should be included in the scope of the SA BREF when they can be considered directly associated activities, e.g. due to their contribution to the overall energy consumption of the installation. The TWG reached a consensus on the latter option.

Followed by a request from a few TWG members, the EIPPCB clarified that waste water landspreading would be included in the scope of the SA BREF.

Conclusions reached by the TWG:

- To exclude landfilling and land injection from the scope of the SA BREF.
- To include composting and anaerobic digestion in the scope of the SA BREF when these activities are directly associated with the SA installation.

2.2.4 Interface with the WI BREF

In the BP, the EIPPCB had proposed to include the incineration of carcasses and to exclude the combustion of animal fat and meat-and-bone meal from the scope of the SA BREF.

Without much discussion, the TWG reached consensus to include the incineration of carcasses in the scope of the SA BREF. The inclusion of the combustion of animal fat and of meat-and-bone meal had already been decided (see Section 2.2.2).

Conclusions reached by the TWG:

- To include in the scope of the SA BREF plants falling under IED Article 42(2)(iii) (i.e. plants incinerating only animal carcasses as regulated by Regulation (EC) No 1069/2009).

2.3 Independently operated waste water treatment plants (WWTPs)

In the BP, the EIPPCB had proposed to include in the scope of the revised SA BREF the activity described in point 6.11 of IED Annex I (independently operated treatment of waste water not covered by Directive 91/271/EEC) when the main pollutant load originates from the activities specified in points 6.4 (a) and/or 6.5 of IED Annex I.

The EIPPCB had not initially proposed this topic for discussion during the KoM, but four industry organisations asked that it be discussed. One of their concerns was that the operators responsible for operating these independently operated plants were not represented at the KoM. A second concern was related to the meaning of the term "main pollutant load". Moreover, one industry organisation asked about the legal consistency between the SA BREF and Annex III to the Urban Waste Water Treatment Directive (Directive 91/271/EEC). Four MS expressed the opinion that there was no problem with the use of the term "main pollutant load", as its definition was an implementation issue and that it could, for example, be handled by applying a mixing calculation rule. The EIPPCB recalled that the proposal had been discussed during many BREF reviews (e.g. TXT BREF, FDM BREF) with the same conclusion. Moreover, the EIPPCB invited MS and industry to promote the participation of independently operated waste water treatment plants (WWTPs) in the plant-specific data collection.

Conclusions reached by the TWG:

- To include in the scope of the SA BREF the activity listed in point 6.11 of IED Annex I (i.e. independently operated treatment of waste water not covered by Directive 91/271/EEC) when the main pollutant load originates from the activities covered by the scope of the SA BREF.

2.4 Combined treatment of waste water

In the BP, the EIPPCB had proposed to include in the scope of the SA BREF the combined treatment of waste water from different origins provided that the main pollutant load originates from the activities covered by the scope of the SA BREF and that the waste water treatment is not covered by Directive 91/271/EEC.

The EIPPCB had not initially proposed this topic for discussion during the KoM, but four industry organisations asked that it be discussed. Their main concern was linked to the meaning of the term "main pollutant load"; one of them pointed out that this type of WWTPs should be regulated in a transparent manner. Three MS did not see any problem with the implementation of that proposal and felt that on-site SA WWTPs receiving various waste water streams could also be covered by the scope of the SA BREF. The EIPPCB clarified that the data collection for the review of the SA BREF will gather information on the origin of the pollutant load treated in WWTPs of SA installations.

Conclusions reached by the TWG:

- To include in the scope of the SA BREF the combined treatment of waste water from different origins provided that the main pollutant load originates from the activities covered by the scope of the SA BREF and that the waste water treatment is not covered by Directive 91/271/EEC.

2.5 Additional activities to be covered

In the BP, the EIPPCB had proposed to include cooling in the scope of the SA BREF (e.g. regarding the use of refrigerants other than water) unless it is covered by the ICS BREF.

Two MS and two industry organisations expressed their opinion that the handling of casings and offal should be covered by the scope of the SA BREF. One industry organisation indicated that the wording of the proposal in relation to cooling (i.e. the reference to the use of refrigerants other than water) was redundant and unnecessary.

Conclusions reached by the TWG:

- To include cooling in the scope of the SA BREF.
- To include the handling of casings and offal (viscera) in the scope of the SA BREF.

3 STRUCTURE OF THE SA BREF AND OF ITS BAT CONCLUSIONS

3.1 Structure of the BREF

In the BP, the EIPPCB had made a detailed proposal for the SA BREF structure, which could be adapted depending on the information and data collected during the SA BREF review. The proposal included dedicated chapters for slaughterhouses (cattle, pigs, poultry and others) and ABP installations (rendering, fishmeal and fish oil production, blood processing, gelatine manufacturing, incineration of carcasses).

The EIPPCB had not initially proposed this topic for discussion during the KoM, but two MS and one industry organisation asked for it to be discussed. The TWG generally welcomed the EIPPCB proposal and was generally in favour of a differentiation between animal species. Several remarks on the BREF structure were made, as follows:

- Two MS and three industry organisations highlighted the need to significantly shorten the length of the SA BREF and to avoid repetition.
- Two MS and one industry organisation pointed out the need to address feather processing, possibly in a dedicated section of the chapter on ABP installations.
- One MS and two industry organisations pointed out the need to address sheep and goat slaughtering separately.
- Two industry organisations highlighted the need to reflect the KoM conclusions on the scope of the SA BREF within the BREF structure, e.g. with respect to edible co-products, combustion of meat-and-bone meal and preservation of hides and skins.
- One MS and two industry organisations asked for a differentiation between various poultry species (e.g. turkeys, chickens).

Conclusions reached by the TWG:

- The TWG generally welcomed the structure of the BREF as proposed by the EIPPCB in the Background Paper and suggested to organise the information according to different animal species.
- The EIPPCB to take into account the aforementioned suggestions made by the TWG for improving the structure of the SA BREF for Draft 1 of the revised SA BREF.

3.2 Structure of BAT conclusions

The EIPPCB had placed this item in Chapter 3 of the BP (items not proposed for discussion during the KoM). No TWG member requested its discussion prior to the KoM, so the proposal was agreed without further discussion.

Conclusions reached by the TWG:

- To generally use the structure of the BAT chapter of the current SA BREF, which can be adapted depending on the information and data collected during the SA BREF review.

4 EMISSIONS TO AIR AND TO WATER

4.1 Overview

A large part of the meeting was dedicated to the identification of pollutants emitted to air and to water by SA installations and for which emission-related data will be collected in a systematic way via questionnaires, with the aim to derive emission levels associated with BAT (i.e. BAT-AELs). These pollutants are called KEIs (key environmental issues). See Section 5 for other KEIs related to energy and water consumption, and amount of water discharged.

For parameters that are not proposed as KEIs, unless specified otherwise, no data will be collected via questionnaires and BAT-AE(P)Ls will not be set, although 'bulk information' on associated techniques can be provided by the TWG (see Section 9).

In the BP, more than 25 pollutants (or KEI candidates) emitted to air and to water by SA installations were assessed (as single substances or groups of substances). All these pollutants were discussed during the KoM.

The EIPPCB had assessed those pollutants by using an approach based on the following four criteria:

1. What is the environmental relevance of the pollutant?
2. What is the significance of the activity?
3. What is the potential for identifying new or additional techniques that would further significantly reduce pollution?
4. What is the potential for BAT-AELs that would significantly improve the level of environmental protection from current emission levels?

This approach was detailed in the BP and in the presentation made in the KoM by the EIPPCB.

This document does not aim to report the detailed discussion that took place for each and every pollutant, but focuses only on the most important points. The list of KEIs included in the review of the SA BREF is summarised in Table 1 and Table 2.

4.2 Emissions to water

One aspect of the discussions concerned direct and indirect discharges of waste water to the environment, as two MS and one environmental organisation expressed the view that no distinction should be made between direct and indirect discharges. On the other hand, some other TWG members (i.e. three MS and one industry organisation) expressed the opinion that for some pollutants (e.g. COD, TOC, TSS, TN, TP), BAT-AELs should not be derived for indirect discharges. Moreover, the need to collect information on the sources of copper and zinc emissions (e.g. tap water) was stated.

Based on the proposals made by the EIPPCB in the BP and on the discussions which took place during the KoM for each pollutant, **the TWG concluded to include in the review of the SA BREF the KEIs for emissions to water which are summarised in Table 1.**

Table 1: KEIs for emissions to water included in the review of the SA BREF

(Groups of) Substance(s)	Type of discharge
Chemical oxygen demand (COD)	KEI for direct discharges only
Total organic carbon (TOC)	KEI for direct discharges only
Total suspended solids (TSS)	KEI for direct discharges only
Total nitrogen (TN)	KEI for direct discharges only
Total phosphorus (TP)	KEI for direct discharges only

In addition, a number of conclusions were reached for some pollutants or parameters, as follows.

Conclusions reached by the TWG related to chemical oxygen demand (COD) and to total organic carbon (TOC):

- To aim to derive BAT-AELs for direct discharges of both TOC and COD, with the possibility to use only one of the two, but with preference being given to TOC.

With respect to the measurement of COD, information on alternative methods for COD monitoring that do not rely on the use of toxic compounds will be provided by UK. Moreover, EUfishmeal will provide information on the reported problems with the measurement of COD/TOC in waste water from fishmeal and fish oil production.

Conclusions reached by the TWG related to emissions of total suspended solids (TSS):

- To collect data on TSS for indirect discharges from slaughterhouses as contextual information.

Conclusions reached by the TWG related to emissions of copper and zinc:

- To collect information on sources of copper and zinc emissions from slaughterhouses and on techniques to reduce copper and zinc emissions.
- To collect data on direct and indirect emissions of copper and zinc from slaughterhouses.
- To decide at a later stage whether BAT-AELs for copper and/or zinc emissions to water should be derived, based on the availability and comparability of the data collected through the questionnaires.

Conclusions reached by the TWG related to emissions of adsorbable organically bound halogens (AOX):

- To collect information on sources of AOX emissions from SA installations and on techniques to reduce AOX emissions.

-
- To collect data on direct and indirect emissions of AOX from SA installations.
 - To decide at a later stage whether BAT-AELs for AOX emissions to water should be derived, based on the availability and comparability of the data collected through the questionnaires.

Conclusions reached by the TWG related to detergents and microorganisms resistant to antimicrobials:

- To collect bulk information on the selection and use of less harmful detergents in SA installations.
- To collect bulk information on emissions of microorganisms resistant to antimicrobials from slaughterhouses as well as on techniques to reduce such emissions.

Conclusions reached by the TWG related to contextual information to be collected:

- To collect data on the following substances and parameters not as KEIs but as contextual information:
 - temperature (for direct discharges only);
 - BOD₅ or BOD₇ (for direct discharges only);
 - ammonium-N (for direct discharges only);
 - pH (for direct and indirect discharges);
 - chloride (in slaughterhouses, in SA installations performing hide/skin salting and in gelatine manufacturing installations using bones, for both direct and indirect discharges);
 - sulphide and sulphate (in slaughterhouses and rendering installations, for direct and indirect discharges);
 - level of automation (for slaughterhouses).

Conclusions reached by the TWG in relation to other proposals:

- Not to include as KEIs or as contextual information the following parameters: detergents, cobalt, antimicrobial-resistant bacteria, dimethylamine (DMA) and trimethylamine (TMA), nitrite, pharmaceuticals and reactive phosphorus.

4.3 Emissions to air

Odour was one of the main topics for emissions to air. The EIPPCB proposal had been to include channelled odour emissions as a KEI for all SA installations. A majority of the TWG members supported this proposal, although various TWG members were not in favour of setting BAT-AELs for channelled odour emissions. One MS and three industry organisations pointed out that the existing standard for measuring odour emissions to air (i.e. EN 13725) is not suitable for comparing measurement results from different laboratories. The EIPPCB reminded that the standard EN 13725 has existed since 2003. Three MS and two industry organisations made the point that odour should be regulated as a local issue and not through BREFs/BAT conclusions. Following the experience of the WT BREF which includes BAT-AELs for channelled odour emissions, it was concluded to collect data on channelled odour emissions to air and to decide at a later stage whether BAT-AELs should be derived.

There was a discussion about the KEIs in relation to the combustion processes that were added to the scope (see Section 2.2.2), namely:

- the combustion of meat-and-bone meal and of animal fat;
- the burning of malodorous gases including non-condensable gases (e.g. in thermal oxidisers or steam boilers).

The TWG agreed that channelled emissions of dust, NH₃, TVOC, NO_x and SO_x were KEIs for these two processes. The TWG also discussed whether the KEIs for the incineration of carcasses were also relevant for the combustion of meat-and-bone meal. The evidences in the current SA BREF supported their inclusion as KEIs.

Based on the proposals made by the EIPPCB in the BP and on the discussions which took place during the KoM for each pollutant, **the TWG concluded to include in the review of the SA BREF the KEIs for channelled emissions to air which are summarised in Table 2.**

Table 2: KEIs for channelled emissions to air included in the review of the SA BREF

(Groups of) Substance(s)	Type of installation or process
Odour	All SA installations
H ₂ S	Rendering installations
HFC and HCFC	Slaughterhouses
Dust	<ul style="list-style-type: none"> • Non-slaughterhouse SA installations when thermal oxidation is used as an abatement technique. • Incineration of carcasses. • Combustion of meat-and-bone meal and animal fat. • Burning of malodourous gases including non-condensable gases (e.g. in thermal oxidisers or steam boilers) in SA installations.
SO _x	
NO _x	
NH ₃	<ul style="list-style-type: none"> • Rendering installations. • Incineration of carcasses. • Combustion of meat-and-bone meal and animal fat. • Burning of malodourous gases including non-condensable gases (e.g. in thermal oxidisers or steam boilers) in SA installations.
TVOC	
HCl	<ul style="list-style-type: none"> • Incineration of carcasses. • Combustion of meat-and-bone meal.
Dioxins and furans	
Hg	
Cd+Tl	
Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	
HF	<ul style="list-style-type: none"> • Incineration of carcasses.

In addition, a number of conclusions were reached for some pollutants or parameters, as follows.

Conclusions reached by the TWG in relation to emissions of odour and H₂S:

- To collect information on techniques to prevent and/or reduce diffuse odour emissions, including from waste water treatment plants.
- To decide at a later stage whether BAT-AELs for channelled emissions of odour and/or H₂S to air should be derived, based on the availability and comparability of the data collected through the questionnaires.

Conclusions reached by the TWG in relation to emissions of refrigerants:

- To collect information on the use of refrigerants without ozone depletion potential and with low global warming potential in slaughterhouses.
- To collect information on the consumption of refrigerants and techniques to prevent or reduce leakages in slaughterhouses through the questionnaires.

Conclusions reached by the TWG in relation to emissions of dust:

- To collect information on techniques to prevent or reduce dust emissions from non-slaughterhouse SA installations.
- Not to include dust as a KEI for slaughterhouses.

Conclusions reached by the TWG in relation to emissions of NH₃:

- Not to include NH₃ as a KEI for slaughterhouses.

Conclusions reached by the TWG in relation to channelled emissions of CO from non-slaughterhouse SA installations:

- To include in the questionnaires CO emissions not as a KEI but as contextual information on the combustion efficiency of thermal oxidisers.
- To include in the questionnaires CO emissions from the incineration of carcasses not as a KEI but as contextual information on the combustion efficiency.
- To include in the questionnaires CO emissions not as a KEI but as contextual information on the combustion efficiency of:
 - the combustion of meat-and-bone meal and animal fat;
 - the burning of malodourous gases including non-condensable gases (e.g. in thermal oxidisers or steam boilers) in SA installations.

Conclusions reached by the TWG in relation to other proposals:

- Not to include noise as a KEI for SA installations.
- To collect information on techniques to prevent or reduce noise emissions from SA installations.
- Not to include Sn as a KEI for the incineration of carcasses.

5 CONSUMPTION OF ENERGY AND WATER AND AMOUNT OF WASTE WATER DISCHARGED

For consumption KEIs, it had been proposed that related data would be collected via plant-specific questionnaires. Most of the TWG members agreed upon the need to collect consumption data from specific processes and contextual information necessary to assess these data, in addition to the collection of consumption data and the amount of waste water discharged at installation level.

The TWG concluded on a closed list of specific processes representing the major sources of energy consumption in SA installations, and the major sources of water consumption for non-slaughterhouse SA installations. Several TWG members pointed out the limited availability of consumption data for some specific processes in SA installations.

The TWG highlighted the need to collect contextual information to characterise correctly the data collected from slaughterhouses also performing FDM activities.

The TWG members were in favour of keeping consumption data and the amount of waste water discharged as non-confidential information. One MS and one industry organisation expressed their wish to keep the questionnaire as simple as possible, in particular regarding the collection of contextual information.

Conclusions reached by the TWG related to energy consumption at installation level:

- To include energy consumption at installation level as a KEI for SA installations.
- To identify the contextual information (e.g. plant size and configuration, type of processes, raw materials (e.g. category), product specifications, system boundaries, hygiene requirements) needed to understand and compare the data collected.
- To decide at a later stage, based on the availability and comparability of the data collected through the questionnaires, whether BAT-AEPLs for specific energy consumption should be derived.

Conclusions reached by the TWG related to energy consumption for specific processes in slaughterhouses:

- To include energy consumption as a KEI in slaughterhouses for the following specific processes:
 - cooling through all types of systems (electricity);
 - pig and poultry scalding (heat);
 - pig singeing (heat);
 - production of hot water for cleaning and disinfection (heat).
- To identify the contextual information (e.g. plant size, different animals, fuels used, overlaps with FDM processes, climate) needed to understand and compare the data collected.
- To decide at a later stage, based on the availability and comparability of the data collected through the questionnaires, whether BAT-AEPLs for specific energy consumption should be derived.

Conclusions reached by the TWG related to energy consumption for specific processes in non-slaughterhouse SA installations:

- To include energy consumption as a KEI in non-slaughterhouse SA installations for the following specific processes:
 - drying (in rendering, fishmeal and fish oil production, blood processing and gelatine manufacturing installations);
 - waste gas treatment.

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- To identify the contextual information (e.g. different raw materials processed (e.g. category), fuels used, type of drying process) needed to understand and compare the data collected.
 - To decide at a later stage, based on the availability and comparability of the data collected through the questionnaires, whether BAT-AEPLs for specific energy consumption should be derived.
 - Not to include energy efficiency as a KEI for installations incinerating carcasses.

Conclusions reached by the TWG related to water consumption and waste water discharge at installation level:

- To include water consumption and waste water discharge as KEIs for SA installations.
- The TWG to identify the contextual information (e.g. plant size, source of water, water reuse, type of processes, raw materials (e.g. category), product specifications, system boundaries, hygiene requirements) needed to understand and compare the data collected.
- The TWG to decide at a later stage, based on the availability and comparability of the data collected through the questionnaires, whether BAT-AEPLs for specific water consumption or waste water discharge should be derived.

Conclusions reached by the TWG related to water consumption for specific processes in slaughterhouses:

- To include water consumption as a KEI in slaughterhouses, in particular for the following specific processes:
 - cleaning of floors and equipment (all animals);
 - sterilisation of slaughtering tools;
 - vehicle washing (all animals);
 - pig and poultry scalding;
 - poultry defeathering.
- To identify the contextual information (e.g. type of animals, cleaning strategies, level of automation, hygiene requirements, water recycling, cooling tower losses, handling of by-products and co-products) needed to understand and compare the data collected.
- To decide at a later stage, based on the availability and comparability of the data collected through the questionnaires, whether BAT-AEPLs for specific water consumption should be derived.

Conclusions reached by the TWG related to water consumption for specific processes in non-slaughterhouse SA installations:

- To include water consumption as a KEI in non-slaughterhouse SA installations for the following specific processes:
 - cleaning of floors and equipment;
 - boilers including when using conventional fuels;
 - vehicle washing.
- To identify the contextual information (e.g. plant size, source of water, type of raw materials processed (e.g. category), hygiene requirements, type of processes) needed to understand and compare the data collected.
- To decide at a later stage, based on the availability and comparability of the data collected through the questionnaires, whether BAT-AEPLs for specific water consumption should be derived.

6 DATA COLLECTION

6.1 Environmental performance levels

6.1.1 Expression of BAT-AELs

The TWG broadly agreed with the EIPPCB proposal to generally express BAT-AELs for emissions to air and to water in concentrations, if deemed appropriate coupled with abatement efficiencies.

Two MS, six industry organisations and one environmental organisation supported the idea to derive BAT-AELs expressed in loads or in specific loads (either as an alternative or as a complement to BAT-AELs expressed in concentrations) and that the data collection should encompass the parameters needed to do so (e.g. amount of raw materials and products). Three MS supported the EIPPCB proposal to generally express BAT-AELs in concentrations, but were open to the possibility of also expressing BAT-AELs in specific loads. Nevertheless, two of these MS highlighted the difficulties in expressing BAT-AELs in specific loads, due to e.g. potential confidentiality reasons. Three MS were not in favour of collecting data for specific loads, referring to the experience of trying to derive BAT-AELs expressed in specific loads during the FDM BREF review. After some discussion, two MS argued that only specific loads would make sense, but not loads expressed in mass per time. The EIPPCB recalled the experience from the FDM BREF review where BAT-AELs in specific loads were not set due to the complexity of the factors to be taken into account, as both the performance of the installations with respect to waste water treatment **and** with respect to waste water generation would have to be assessed. In addition, the need to collect the right contextual information (e.g. waste water flow) to correctly understand the emissions and the abatement efficiencies was stressed by the TWG.

After considering all the arguments, the TWG concluded the following.

Conclusions reached by the TWG:

- To generally express BAT-AELs for emissions to air and to water in concentrations, if deemed appropriate coupled with abatement efficiencies.
- During the drafting of the questionnaire(s), to clearly define all parameters influencing emission levels (e.g. type of products/raw materials, boundaries of the process, material flows, sources and characteristics of waste gases and waste waters, waste gas and waste water flows, specific operating conditions).

6.1.2 Averaging periods for BAT-AELs

During the meeting, the TWG supported the EIPPCB proposal made in the BP to generally express BAT-AELs for emissions to air as short-term averages and BAT-AELs for emissions to water as daily averages.

Conclusions reached by the TWG:

- For channelled emissions to air, to generally express BAT-AELs as short-term averages, i.e. as daily averages (for continuous measurements) or as averages over the sampling period (for periodic measurements).
- For emissions to water, to generally express BAT-AELs as daily averages, obtained via 24-hour flow-proportional composite samples.

6.1.3 Specific water and energy consumption and specific waste water discharge

In the BP, the EIPPCB had proposed to collect data for specific water and energy consumption and specific waste water discharge expressed per tonne of raw material and based on a yearly averaging period.

Three MS and five industry organisations expressed their concern over expressing the units per raw material. Several alternatives to the term "raw material" were proposed, e.g. carcase, co-product or number of animals for slaughterhouses, or evaporated water for ABP installations.

Given the considerable number of alternatives, the TWG concluded that these details would be better addressed later during the questionnaire development.

Conclusions reached by the TWG:

- The TWG to provide proposals and to decide on the averaging periods and the units for the expression of specific water and energy consumption during the questionnaire development.

6.2 Focus of the data collection for non-slaughterhouse SA installations

During the meeting, the TWG supported the EIPPCB proposal made in the BP to focus the data collection for the review of the SA BREF on, but not limit it to, certain types of non-slaughterhouse SA installations.

Conclusions reached by the TWG:

- To focus the data collection for non-slaughterhouse SA installations for the review of the SA BREF on, but not limit it to, the following types of installations:
 - rendering (e.g. of bones, feathers, carcasses, fats, blood, hides and skins);
 - fishmeal and fish oil production;
 - blood processing (plasma and dried red cells production);
 - gelatine manufacturing;
 - incineration of carcasses.

6.3 Questionnaire for gathering data and information

The EIPPCB had proposed in the BP to follow the established process for the data collection, which was supported by the TWG during the meeting.

The period to be covered by the data collection was discussed as the operators may not have data available from 2019 when the data collection will be launched (see also Section 8).

Conclusions reached by the TWG:

- To follow the established BREF process for the collection of plant/installation-specific data via questionnaires including the following:
 - the preparation of the draft questionnaire(s) by the EIPPCB followed by the commenting of the whole TWG, if necessary in several iterations;
 - the organisation of a questionnaire(s) workshop to finalise the questionnaire(s);
 - the testing of the draft final questionnaire(s) by a selected (small) number of plants/installations;
 - the preparation of the final questionnaire(s) by the EIPPCB;
 - the distribution of the final questionnaire(s) by Member States' representatives, if deemed necessary in cooperation with the other stakeholders, to the participating plants/installations;
 - the filling in of the questionnaire(s) by the plants/installations;
 - the collection of the filled-in questionnaires by Member States' representatives;
 - the quality check of the filled-in questionnaires by Member States' representatives (possibly with the help of a checklist that the TWG and the EIPPCB could have developed);
 - the submission of the quality-checked non-confidential questionnaires to the TWG via BATIS by Member States' representatives.
- The TWG to decide on the content and format of the questionnaires during the preparation of the questionnaire as described above.
- To collect available data for the reference years 2018, 2017 and 2016.

6.4 Confidentiality issues

In the BP, the EIPPCB had proposed to design the questionnaire in a way that avoids requesting confidential data, and to decide at a later stage (e.g. during the workshop on the questionnaire finalisation) on the type and format of potentially confidential information. This proposal received broad support from the TWG.

Conclusions reached by the TWG:

- To design the questionnaire(s) in a way that avoids requesting confidential data as much as possible so that the data provided by operators can be posted directly onto BATIS and shared with the whole TWG.
- The TWG to decide at a later stage (e.g. during the workshop on the questionnaire(s) development) about the type and format of potentially confidential information that needs to be collected (e.g. quantity of raw materials treated and plant's actual production).
- The Member States' representatives in the TWG to:
 - i) submit the versions of the questionnaires containing the confidential information directly to the EIPPCB via email; and
 - ii) post the versions of the questionnaires containing the non-confidential information to BATIS.

7 TECHNIQUES TO CONSIDER IN THE DETERMINATION OF BAT AND EMERGING TECHNIQUES

7.1 Techniques to consider in the determination of BAT and emerging techniques in the existing SA BREF

The call for IPs contained a list of techniques described in the existing SA BREF which comprised 185 techniques to consider in the determination of BAT and 2 emerging techniques.

TWG members had been asked to indicate:

- any obsolete techniques, i.e. techniques that are no longer used;
- which techniques are considered to be the most important;
- which techniques require updating (and which part of the information, e.g. description, emission/consumption levels, applicability, economics);
- what additional information can be provided;
- any emerging techniques which could now be considered BAT candidates.

Concerning these techniques and the information provided in the IPs, the proposal made by the EIPPCB was agreed without further discussion at the meeting.

Conclusions reached by the TWG:

- To take into account the information provided for the drafting of the revised SA BREF.

7.2 Techniques to increase energy efficiency

Concerning these techniques, the proposal made by the EIPPCB was agreed without further discussion.

Conclusions reached by the TWG:

- To collect information on techniques to increase energy efficiency which are specific to the SA sector, and avoid duplication of techniques already covered by the ENE BREF and the ICS BREF by making appropriate cross-references to these BREFs in the SA BREF.

7.3 Additional techniques to consider in the determination of BAT

The call for IPs had asked TWG members to propose additional techniques (not included in the current SA BREF) that could be considered as BAT candidates or emerging techniques. 15 additional techniques were proposed by TWG members. Other techniques originated from the study for the identification and promotion of novel and emerging sustainable techniques (the so-called 'innovation observatory'). Concerning these techniques, the proposal made by the EIPPCB was agreed without further discussion.

Conclusions reached by the TWG:

- The TWG to provide information on additional techniques (not included in the current BREF) using the standard 10-heading template of the BREF Guidance (in the event that they have not already done so).
- To take into account the information provided by the TWG and from the 'innovation observatory' for the drafting of the revised SA BREF.

7.4 Techniques included in Section 7.7 of the current SA BREF

The call for IPs had asked TWG members to evaluate the techniques included in Section 7.7 (Techniques not included in Chapter 4, 'Techniques to consider in the determination of BAT', due to lack of sufficient information) of the SA BREF and to indicate:

- which techniques may be considered as BAT candidates in the BREF review;
- what additional information can be provided.

Concerning these techniques and the information provided in the IPs, the proposal made by the EIPPCB was agreed without further discussion.

Conclusions reached by the TWG:

- The TWG to provide information on techniques to be considered for the determination of BAT using the 10-heading template.
- To take into account the information provided for the drafting of the revised SA BREF.

8 NEXT STEPS TO BE TAKEN AFTER THE MEETING

During the final session of the meeting, the TWG agreed on the following actions and timetable for the next steps to be taken.

Step	Targeted time
EIPPCB to issue the first draft questionnaire	Middle of September 2019
TWG to provide feedback on the first draft questionnaire	Middle of October 2019
EIPPCB to issue the second draft questionnaire	Middle of November 2019
TWG to provide proposals of well-performing plants for the data collection	End of November 2019
Workshop on the questionnaire finalisation	End of November 2019
EIPPCB to issue the third draft questionnaire	Middle of December 2019
EIPPCB to compile the list of well-performing plants and to check its completeness; if necessary, EIPPCB to ask TWG members to amend/complete the list	Middle of December 2019
TWG to finalise the questionnaire testing	Middle of January 2020
EIPPCB to issue the final questionnaire and distribution to the participating plants	End of January 2020
TWG to provide bulk information in order to update the text of the SA BREF, namely information on applied processes and techniques, on the techniques to be considered for the determination of BAT and on emerging techniques	Middle of February 2020
Submission of validated filled-in questionnaires in BATIS after quality check by Member States' representatives	End of April 2020

The EIPPCB also asked the TWG members to make proposals for site visits in the coming months, as provided for in Section 4.4.4 of the BREF Guidance.

9 ANNEX I: STANDARD STRUCTURE FOR DESCRIBING THE 'TECHNIQUES TO CONSIDER IN THE DETERMINATION OF BAT'

When providing information on 'Techniques to consider in the determination of BAT', the use of a standard structure is required in order to enable comparisons of techniques so that an objective assessment against the definition of BAT given in the IED can be made. This standard structure is stipulated in the BREF Guidance. It is necessary to use this standard structure for the provision of information for specific techniques.

Standard structure for describing BAT candidate techniques (see BREF Guidance)

In order to determine BAT, all techniques to be considered in the BAT decision-making process will be presented in the BREF according to a standard structure, shown in the first two columns of the following table. The third column gives more details on the specific data which are needed in order to draft 'Techniques to consider in the determination of BAT' and to derive useful BAT conclusions from them.

Name of the type of information	Type of information to be included in the BREF	Important information to collect and to report
Description	A brief description of the technique with a view to being used in the BAT conclusions.	
Technical description	A detailed and concise technical description of the technique (including chemical or other equations, pictures, diagrams and flow charts when appropriate).	The description can include both prevention and control techniques (in-process and end-of-pipe).
Achieved environmental benefits	The main potential environmental benefits (including reduced consumption of energy, reduced emissions to water, air and land, raw material savings as well as production yield increases, reduced waste, etc.) to be gained through implementing the technique.	
Environmental performance and operational data	Actual plant-specific performance data (including consumption and emission levels, consumption levels – of raw materials, water, energy – amounts of residues/wastes generated, including reference conditions – e.g. O ₂ level – and monitoring methods used) achievable applying the technique. Any other information on how to design, operate, maintain and control the technique.	<p><u>Emission data</u></p> <ul style="list-style-type: none"> • Both the concentration and (specific) load of pollutant(s) (if available) or the data needed to derive this information. For specific load data, the product referred to should be clearly defined. • The quantity of the pollutant before and after the abatement system in order to determine the abatement efficiency. • Details of relevant operating conditions (percentage of full capacity, fuel composition, bypassing of the abatement technique, inclusion or exclusion of other than normal operating conditions, reference conditions). • Emission monitoring issues (including information on frequency, averaging period, uncertainties, plant operating condition, etc.). <p><u>Consumption data:</u></p> <ul style="list-style-type: none"> • The type and amount of fuel, energy (heat, electricity), water and raw materials/chemicals consumed/used by the technique. <p><u>Waste:</u></p> <ul style="list-style-type: none"> • The type and quantities of waste generated and treatment/disposal methods and/or techniques to prevent waste. <p><u>Others:</u></p> <ul style="list-style-type: none"> • Sensitivity and durability of the technique. • Operation/control/maintenance issues. • Issues regarding accident prevention.
Cross-media effects	Relevant negative environmental effect due to implementing the technique, allowing a comparison amongst techniques in order to assess the impact on the environment as a whole (such as consumption and nature of raw materials and	The Reference Document on Economics and Cross-media Effects (ECM) is a document that should be taken into account with regard to cross-media aspects as far as there are significant cross-media effects. This document is available from the European IPPC Bureau website at

Name of the type of information	Type of information to be included in the BREF	Important information to collect and to report
	water, energy consumption and contribution to climate change, stratospheric ozone depletion potential, photochemical ozone creation potential, acidification resulting from emissions to air, particulate matter in ambient air (including microparticles and metals), eutrophication of land and waters resulting from emissions to air or water, oxygen depletion potential in water, persistent/toxic/bioaccumulable components (including metals), generation of residues/waste, limitation of the ability to reuse or recycle residues/waste, generation of noise and/or odour, increased risk of accidents.	http://eippcb.jrc.ec.europa.eu/reference/BREF/ecm_bref_0706.pdf
Technical considerations relevant to applicability	Indication if the technique can be applied throughout the sector; otherwise, information on the main general technical restrictions on the use of the technique (including an indication of the type of plants or processes within the sector to which the technique cannot be applied, and constraints to implementation).	
Economics	Information on costs (both investment and operational) and possible savings, including details on how these costs have been calculated	<ul style="list-style-type: none"> • Capital/investment, operating and maintenance costs including details on how these costs/savings have been calculated/estimated. • Possible savings (including payback time), including details on how these costs/savings have been calculated/estimated. • Cost data will preferably be given in euros (EUR). If a conversion is made from another currency, the data in the original currency and the year when the data were collected will be indicated. This is important as conversion rates vary over time. • Price/cost of equipment or service will be accompanied with the year it was purchased. • Information relevant to both new and existing plants enabling, where possible, the economic viability of the technique for the sector concerned. • Information on the cost-effectiveness of the technique (e.g. in EUR per abated mass of pollutant), where relevant. <p>The Reference Document on Economics and Cross-media Effects (ECM) and the JRC Reference Report on Monitoring of Emissions to Air and Water from IED Installations (ROM) should be taken into account with regard to economic aspects and monitoring costs, respectively. Both documents are available from the European IPPC Bureau website at http://eippcb.jrc.ec.europa.eu/reference/</p>
Driving force for implementation	Local conditions or requirements (e.g. legislation, safety measures) or non-environmental triggers (e.g. increased yield, improved product quality, economic incentives) which drive or may stimulate implementation. Information on reasons other than environmental ones for implementation.	<p>Examples:</p> <ul style="list-style-type: none"> • information on type/quality of receiving waters (e.g. temperature, salinity) • information on environmental quality standards • information on the increase of production or productivity
Example plants	Reference to plants in which the technique is implemented and from which information has been collected and used in writing the section, including an indication of the degree to which the technique is in use in the EU or worldwide.	
Reference literature	Literature or other reference material that was used in writing the section and that contains more detailed information. When the reference material consists of a large number of pages, reference will be made to the relevant page(s) or section(s).	