



EUROPEAN COMMISSION  
DIRECTORATE-GENERAL  
JOINT RESEARCH CENTRE  
Directorate B – Growth and Innovation  
Circular Economy and Industrial Leadership Unit (DG JRC.B.5)  
**European IPPC Bureau**

Seville, 08<sup>th</sup> May 2019

**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**

**BACKGROUND PAPER**

**INTRODUCTION**

The Industrial Emissions Directive (IED) (2010/75/EU), through its Chapters I and II, lays down a framework requiring Member States to issue operating permits for certain installations carrying out industrial activities described in its Annex I. Two of the ‘Other activities’ in Annex I to the IED are:

*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.*

which are subsumed in this document as "**Slaughterhouses and Animal By-product Industries**".

The Directive stipulates that permits must contain conditions based on **Best Available Techniques (BAT)** as defined in Article 3(10) of the Directive, to achieve a high level of protection of the environment as a whole.

The BAT conclusions of the BAT reference documents (BREFs) serve as the reference for the competent authorities when setting permit conditions for installations. BREFs are also used by the industry concerned in preparing applications for operating permits. Additionally, BREFs are a source of information for other parties interested in ways to minimise the environmental impacts of industry.

BAT is a dynamic concept because new techniques may emerge; science and technologies are continuously developing, and new environmental processes are being successfully introduced in industry. Since the elements of BAT change over time, BREFs have to be reviewed and updated as appropriate. In addition, with the entry into force of the IED, the existing BREFs, which were adopted under the former IPPC Directive (i.e. Directive 96/61/EC which was repealed by Directive 2008/1/EC), need to be reviewed and, where necessary, updated.

The technical working group (TWG) set up for the review of the BAT reference document for the Slaughterhouses and Animal By-product Industries (SA BREF) will hold its Kick-off Meeting from 25 to 28 June 2019. The purpose of this paper is to provide TWG members with an outline of the matters that are proposed for discussion at the Kick-off Meeting.

**This Kick-off Meeting (KoM) will determine/clarify the review process for the SA BREF so that TWG members are aware of the specific tasks needed to deliver a high-quality BREF according to the agreed timetable.**



## TABLE OF CONTENTS

<b>ACRONYMS USED IN THIS BACKGROUND PAPER.....</b>	<b>3</b>
GENERAL ACRONYMS – DEFINITIONS .....	3
MEMBER STATES (MS) .....	4
EEA COUNTRIES.....	4
INDUSTRY ASSOCIATIONS .....	4
<b>1 GENERAL INFORMATION .....</b>	<b>5</b>
1.1 THE CURRENT SA BREF AND THE SA BREF REVIEW .....	5
1.2 OBJECTIVES OF THE SA BREF REVIEW.....	5
1.3 PROCESS TO REVIEW THE SA BREF.....	5
1.4 CALL FOR INITIAL POSITIONS (IPs) .....	6
1.5 OBJECTIVES OF THE KICK-OFF MEETING .....	7
1.6 STRUCTURE AND OVERVIEW OF THIS BACKGROUND PAPER .....	7
1.7 BEFORE COMING TO THE MEETING.....	8
<b>2 ITEMS PROPOSED FOR DISCUSSION AT THE KICK-OFF MEETING....</b>	<b>9</b>
2.1 SCOPE OF THE SA BREF .....	9
2.1.1 Overview.....	9
2.1.2 Interface with other BREFs .....	10
2.1.2.1 FDM BREF.....	10
2.1.2.2 LCP BREF and MCP Directive .....	11
2.1.2.3 WT BREF .....	12
2.1.2.4 WI BREF .....	13
2.1.3 Additional installations/activities to be covered/excluded from the scope of the SA BREF .....	14
2.2 KEY ENVIRONMENTAL ISSUES (KEIs) FOR THE SA BREF.....	16
2.2.1 Overview.....	16
2.2.2 Emissions to water .....	17
2.2.2.1 EIPPCB proposals .....	17
2.2.2.2 Other proposals from TWG members.....	20
2.2.3 Emissions to air.....	22
2.2.3.1 EIPPCB proposals .....	22
2.2.3.2 Other proposals from TWG members.....	35
2.2.4 Energy consumption and efficiency.....	36
2.2.4.1 Installation level .....	36
2.2.4.2 Specific processes .....	37
2.2.5 Water consumption and amount of waste water discharged.....	42
2.2.5.1 Installation level .....	42
2.2.5.2 Specific processes .....	44
2.3 DATA COLLECTION.....	48
2.3.1 Environmental performance levels .....	48
2.3.1.1 Expression of BAT-AELs for emissions to air and water.....	48
2.3.1.2 Averaging periods for BAT-AELs related to emissions to air and to water .....	50
2.3.1.3 Specific water and energy consumption / waste water discharge .....	51
2.3.2 Focus of the plant-specific data collection for animal by-product installations .....	53
2.3.3 Questionnaire(s) for gathering plant-specific data and information .....	54
2.3.4 Confidentiality issues.....	55
2.4 NEXT STEPS .....	57
<b>3 ITEMS NOT PROPOSED FOR DISCUSSION AT THE KICK-OFF MEETING .....</b>	<b>59</b>

3.1	SCOPE OF THE SA BREF .....	59
3.1.1	Independently operated waste water treatment plants .....	59
3.1.2	Combined treatment of waste water .....	60
3.1.3	Combustion gases in direct contact with the materials .....	60
3.2	STRUCTURE OF THE BREF AND OF ITS BAT CONCLUSIONS .....	61
3.2.1	Structure of the BREF.....	61
3.2.2	Structure of the BAT conclusions.....	63
3.3	KEY ENVIRONMENTAL ISSUES .....	64
3.3.1	Emission to water.....	64
3.3.1.1	Chemical oxygen demand (COD) and/or total organic carbon (TOC) .....	64
3.3.1.2	Total suspended solids (TSS) .....	65
3.3.1.3	Total nitrogen (TN).....	66
3.3.1.4	Total phosphorus (TP) .....	66
3.3.2	Emissions to air.....	67
3.3.2.1	SO <sub>x</sub> and NO <sub>x</sub> .....	67
3.4	DATA COLLECTION.....	69
3.4.1	Number of SA installations.....	69
3.4.2	List of well-performing installations .....	69
3.4.3	Questionnaire(s) for gathering plant-specific data and information .....	70
3.4.3.1	Content and format .....	70
3.4.3.2	Data at process level .....	71
3.5	TECHNIQUES TO CONSIDER IN THE DETERMINATION OF BAT AND EMERGING TECHNIQUES .....	72
3.5.1	Existing techniques .....	72
3.5.1.1	BAT candidates and emerging techniques in the current SA BREF.....	72
3.5.1.2	Information on techniques to increase energy efficiency .....	73
3.5.2	Additional techniques .....	74
3.5.2.1	Additional techniques proposed by the TWG.....	74
3.5.2.2	Techniques included in Section 7.7 of the current SA BREF.....	75

## ACRONYMS USED IN THIS BACKGROUND PAPER

### 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
BREF	BAT reference document (as defined in Article 3(11) of the IED)
CLM BREF	Best Available Techniques (BAT) Reference Document for the Production of Cement, Lime and Magnesium Oxide
COD	Chemical oxygen demand
EEA	European Economic Area
EIPPCB	European IPPC Bureau
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(s)
KoM	Kick-off meeting
LCP BREF	BAT Reference Document for Large Combustion Plants
MBM	Meat-and-bone meal
MCP	Medium Combustion Plants (as defined in Directive (EU) 2015/2193)
MS	Member State(s)
NH <sub>3</sub>	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 in the Slaughterhouses and Animal By-product Industries
TN	Total nitrogen includes free ammonia and ammonium nitrogen (NH <sub>4</sub> -N), nitrite nitrogen (NO <sub>2</sub> -N), nitrate nitrogen (NO <sub>3</sub> -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

## Member States (MS)

ISO code	Country
AT	Austria
BE	Belgium
CZ	Czech Republic
DE	Germany
DK	Denmark
ES	Spain
FI	Finland
FR	France
IE	Ireland
IT	Italy
NL	The Netherlands
PL	Poland
PT	Portugal
SE	Sweden
UK	United Kingdom

## EEA countries

ISO code	Country
NO	Norway

## Industry associations

Acronym	Meaning
AVEC	Association of Poultry Processors and Poultry Trade in the EU countries
CEFIC	European Chemical Industry Council
CLITRAVI	Liaison Centre for the Meat Processing Industry in the European Union
EBA	European Biogas Association
EFPRA	European Fat Processors and Renderers Association
EUfishmeal	European Fishmeal and Fish Oil Producers
ORGALIME	European Engineering Industries Association
UECBV	European Livestock and Meat Trading Union

## 1 GENERAL INFORMATION

### 1.1 The current SA BREF and the SA BREF review

The information exchange for the original Slaughterhouses and Animal By-products Industries (SA) BREF was carried out between 2000 and 2003 with the BREF formally adopted by the European Commission<sup>1</sup> in 2005 under the IPPC Directive (96/61/EC). The review of the SA BREF is the 20th review of an existing (B)REF to be launched.

The review of the SA BREF started with the reactivation of the TWG in July 2018<sup>2</sup>. This resulted, as of today, in a list of 146 TWG members from Member States, industry, environmental NGOs, and services of the Commission which is available in the BAT Information System (BATIS).

This was followed by the call for initial positions (IPs) to the TWG members (December 2018) to provide opinions on a number of issues related to the review of the BREF.

### 1.2 Objectives of the SA BREF review

The main goals of the review are:

- to bring the SA BREF in line with the IED, in particular with the BREF Guidance<sup>3</sup>;
- to update the information and data contained in the SA BREF, in particular on the environmental performance of SA installations, on techniques to consider in the determination of BAT and on emerging techniques;
- to improve clarity, coherence and consistency; and
- to revise the BAT conclusions and define BAT-AELs.

The review will also address those issues identified in the ‘Concluding remarks’ chapter of the current SA BREF (Chapter 7), where these are still deemed relevant by the TWG.

### 1.3 Process to review the SA BREF

The general timeline for the review of a BREF is given in the BREF Guidance<sup>3</sup> (see Section 1.2.4 of the Guidance) and the approach to take was further agreed at the IED Article 13 Forum meeting of 6 June 2013<sup>4</sup>. The SA TWG will work using the following approach:

- ‘Front-load’ the exchange of information to achieve the best preparation for the Kick-off Meeting (KoM).
- Adopt a more focused approach to the overall SA BREF review process by:
  - targeting the most polluting sectors/subsectors;
  - targeting a limited number of key environmental issues (KEIs);
  - collecting sound and reliable data, followed by appropriate data processing;
  - focusing on BAT conclusions (and the associated BAT candidates chapter);
  - tackling difficult issues with working drafts.
- Strictly limit the possibilities for time slippages.

---

<sup>1</sup> Commission Communication 2005/C 107/05, Official Journal of the European Union, C 107/12, 3.5.2005.

<sup>2</sup> Letter Ares (2018)4170486 from Luis Delgado dated 12 July 2018.

<sup>3</sup> Commission Implementing Decision (2012/119/EU) of 10 February 2012 laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance referred to in the Industrial Emissions Directive 2010/75/EU (IED):

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:063:FULL:EN:PDF>

<sup>4</sup> Work programme for the exchange of information under Article 13(3)(b) of the IED for 2014, Section 4. Consequences for the working methods of the TWGs.

The timetable for the next steps for the review of the SA BREF will be discussed at the KoM.

The steps completed and the main envisaged milestones and deadlines are summarised in Table 1. A more detailed timeline for the immediate next steps is given in Section 2.4.

**Table 1: Milestones for the review of the SA BREF**

<b>Step</b>	<b>Milestones</b>	<b>SA BREF review</b>
<b>1</b>	Reactivation of the TWG	12 July 2018
<b>2</b>	Nominations of TWG members	28 September 2018 (deadline)
<b>3</b>	Call for expression of initial positions	17 December 2018 (deadline: 15 February 2019)
<b>4</b>	<b>Kick-off Meeting (KoM)</b>	<b>25-28 June 2019</b>
<b>5</b>	First formal draft of the revised SA BREF (D1)	Q4 2020 (tentatively)
<b>6</b>	TWG comments on D1	Q1 2021 (tentatively)
<b>7</b>	Final TWG meeting	Q1 2022 (tentatively)
<b>8</b>	Final draft delivered to the IED Article 13 Forum	Q3 2022 (tentatively)
<b>9</b>	BAT conclusions vote at an IED Article 75 Committee meeting	Q1 2023 (tentatively)
<b>10</b>	Publication of the BAT conclusions in the Official Journal of the European Union	Q2 2023 (tentatively)
<b>11</b>	Publication of the BREF on the EIPPCB website	Q2 2023 (tentatively)

## **1.4 Call for initial positions (IPs)**

The call for the expression of TWG members' IPs was issued by the EIPPCB on 17 December 2018, with a deadline for responses of 15 February 2019. It took into account the preliminary contributions of the TWG and contained a number of EIPPCB requests for information and proposals for the issues to be covered by the SA BREF, including:

- the scope;
- the BREF structure;
- the KEI candidates;
- the data collection;
- the selection of installations for the collection of plant-specific data;
- the techniques to consider in the determination of BAT and emerging techniques.



IPs were submitted by 24 stakeholder groups:

- 15 Member States (i.e. AT, BE, CZ, DE, DK, ES, FI, FR, IE, IT, NL, PL, PT, SE, and UK);
- 1 EEA country (i.e. NO);
- 8 industry organisations (i.e. AVEC, CEFIC, CLITRAVI, EBA, EFPRA, EUfishmeal, ORGALIME, and UECBV).

All IPs have been presented using the template ‘Document 3’ which was attached to the call for the expression of IPs. Some TWG members also provided a summary of their IPs and sent additional information.

All information related to the TWG’s IPs is available on BATIS ([Forum > Slaughterhouses and Animal By-products Industries > 02 First SA BREF review 2018- > 02 Call for initial positions > 02 TWG Initial Positions](#)).

## 1.5 Objectives of the Kick-off Meeting

A description of the purpose of the KoM is given in Section 4.6.2.2 of the BREF Guidance.

The KoM will decide particularly on the **scope** (see Section 2.1) and the **KEIs** (see Section 2.2) based on the stakeholders’ input received via the call for IPs. As agreed at the IED Article 13 Forum meeting of 6 June 2013, the KoM will adopt a focused approach to the overall SA BREF review process and to derive BAT conclusions. This may be achieved by ensuring that the scope of the SA BREF is manageable and by limiting the number of KEIs.

Furthermore, the KoM will address and reach conclusions on the items listed below:

- the general timeline of the work – see Section 1.3;
- the structure (and content) of the SA BREF – see Section 3.2;
- the nature and extent of the data collection, including via questionnaire(s) and addressing confidentiality issues – see Section 2.3;
- the specific tasks to be carried out by the TWG, especially indicating which TWG member will deliver specific information – see Section 2.4.

During the KoM, there will be time to discuss the TWG members’ IPs. **The discussions will necessarily be kept general, and discussions will not enter into deep technical debates. For example, positions on techniques and on whether a particular technique is BAT will not be discussed at this stage, because questions of this nature need to be informed by the upcoming data collection exercise.**

## 1.6 Structure and overview of this Background Paper

The aim of this Background Paper (BP) is to assist TWG members in their preparation for the KoM and to create a common basis for the discussion during the meeting.

The TWG IPs have been analysed and grouped into subject groups described in Sections 2 and 3. Issues where the initial feedback from the TWG showed differing views and any new issues requiring discussion within the TWG are presented in Section 2. These are the items considered the most important in terms of obtaining clarification before starting the SA BREF review process and the EIPPCB proposes to discuss these at the KoM.

The EIPPCB proposals provided in the call for IPs upon which the TWG members agree are presented in Section 3 together with other issues that do not need to be discussed during the KoM.

Individual issues in this BP are presented as far as possible as follows.

<b>Original EIPPCB proposal and/or request</b>
This cell contains the original EIPPCB proposal and/or request from the call for IPs issued on 17 December 2018 (when relevant).
<b>Summary of IPs</b>
This cell contains a summary of the TWG members' IPs. The full text of the position is usually not provided. For more details on the IPs (in particular the underlying rationale), please refer to BATIS where the IPs of all the contributors can be found in full.
<b>EIPPCB assessment</b>
This cell contains the EIPPCB's assessment of the positions and, where relevant, new information. The assessment forms the basis for the proposal(s).
<b>EIPPCB proposal</b>
This cell contains the EIPPCB proposal(s) to develop or resolve the issue.

A number of supporting documents are referred to in this BP. These documents can be found in the following BATIS folder: [Forum > Slaughterhouses and Animal By-products Industries > 02 First SA BREF review 2018- > 02 Information collection](#).

The order of the discussion items in this BP will not necessarily be the order of the discussion at the KoM.

## 1.7 Before coming to the meeting

**To enable meaningful discussions at the KoM, it is important that TWG members have read this BP in advance of the meeting.**

If you believe that issues not proposed for discussion at the KoM or issues other than those included in this BP need to be discussed at the KoM, please directly post your request **before 7 June 2019** in the following BATIS folder:

[Forum > Slaughterhouses and Animal By-products Industries > 02 First SA BREF review 2018- > 03 Kick-off meeting > 03 TWG reactions](#)

Such a request must also include a justification/rationale for each new issue proposed to be discussed.

Before coming to the KoM, it is recommended that TWG members read and familiarise themselves with the contents of the following documents and bring them to the meeting:

- The IPs of TWG members posted in the BATIS forum for the SA BREF (> [Forum > Slaughterhouses and Animal By-products Industries > 02 First SA BREF review 2018- > 02 Call for initial positions > 02 TWG Initial Positions](#)).
- The BREF Guidance (Commission Implementing Decision 2012/119/EU). A copy may be obtained by clicking the link to the BREF Guidance at <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1474283772055&uri=CELEX:32012D0119>.
- The IED (2010/75/EU). A copy may be obtained by clicking the link to the IED at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010L0075:EN:NOT>.

## 2 ITEMS PROPOSED FOR DISCUSSION AT THE KICK-OFF MEETING

### 2.1 Scope of the SA BREF

#### 2.1.1 Overview

<b>Original EIPPCB proposal</b>
Proposal 1: The EIPPCB proposes to include in the scope of the SA BREF the activities listed in points 6.4 (a) and 6.5 of Annex I to the IED.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 16 out of 24 IPs agree with the proposal, 7 partly agree, 1 does not provide an answer.</li> <li>• The main comments of the IPs which partly agree with the proposal are as follows: <ul style="list-style-type: none"> <li>- Add to the scope of the SA BREF the production of primary products from animal by-products, such as rendering and fat melting, fishmeal and fish oil production, blood processing and gelatine manufacturing (BE, FR).</li> <li>- Gelatine manufacturing is not a key process of the SA BREF, it should be excluded from the scope of the SA BREF or otherwise add to the scope of the SA BREF "treatment and processing of animal raw materials for the production of food and pharma ingredients" (CEFIC).</li> <li>- Add to the scope of the SA BREF the making of standard cuts for large animals and cuts for poultry (BE).</li> <li>- Clarify that animal by-products (ABP) are not waste and list which ABP activities are covered by the scope of the SA BREF (DE, EFPRA).</li> <li>- Handling of casings and offal should be included under IED Activity 6.4 (a) (CLITRAVI, UECEBV).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the EIPPCB proposal.</li> <li>• The scope of the FDM BREF does not address the production of primary products from ABP, such as rendering and fat melting, fishmeal and fish oil production, blood processing and gelatine manufacturing. This is supposed to be covered by the SA BREF when the treatment capacity exceeds 10 tonnes per day. This could be clarified in the scope of the SA BREF.</li> <li>• Section 2.1.2.1 of this document addresses the interface of the SA BREF with the scope of the FDM BREF.</li> <li>• The term 'animal by-product' is commonly used in the context of the SA BREF, rather than the term 'animal waste'. However, the IED wording cannot be changed by the TWG and is typically copied into the scope of the BAT conclusions to avoid any possible discrepancies and thus room for interpretation.</li> <li>• What is waste or not under the EU waste legislation is not an issue under the remit of the TWG.</li> <li>• There are multiple processes covered by IED Annex I points 6.4 (a) and 6.5.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To modify the original proposal as follows: <ul style="list-style-type: none"> <li>- To include in the scope of the SA BREF the following activities specified in Annex I to Directive 2010/75/EU: <ul style="list-style-type: none"> <li>▪ 6.4. (a) Slaughterhouses with a carcase production capacity greater than 50 tonnes per day.</li> <li>▪ 6.5. Installations for the disposal or recycling of animal carcasses and animal waste with a treatment capacity exceeding 10 tonnes per day.</li> </ul> </li> <li>- To include in the scope of the SA BREF, under IED Annex I point 6.5 activities, the production of primary products from animal by-products, such as rendering and fat melting, fishmeal and fish oil production, blood processing and gelatine manufacturing.</li> </ul> </li> </ul>

## 2.1.2 Interface with other BREFs

### 2.1.2.1 FDM BREF

<b>Original EIPPCB proposal</b>
Proposal 4: The EIPPCB proposes to exclude the treatment and processing of animal materials for the production of food after the making of standard cuts for large animals and cuts for poultry from the scope of the SA BREF.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 11 out of 24 IPs agree with the proposal, 11 partly agree, 2 do not provide answers.</li> <li>• The main comments of the IPs which agree or partly agree are as follows: <ul style="list-style-type: none"> <li>- Integrated installations performing both slaughter and meat processing (cutting, convenience products, etc.) can have different emissions and consumption values. Include directly associated activities in the scope of the SA BREF (AT).</li> <li>- Define 'standard cuts for large animals and cuts for poultry' (DE, DK, FR, PT). Cuts for poultry are defined in Regulation (EC) No 543/2008 (DE).</li> <li>- Define the process boundaries between IED Annex I point 6.4 (a) and handling of casings and offal (DK, UK, CLITRAVI, UECBV).</li> <li>- Include the processing of food-grade ABP in the scope of the SA BREF (EFPRA).</li> <li>- Include deboning in slaughtering of poultry (AVEC, ORGALIME).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The scope of the FDM BREF does not address the making of standard cuts for large animals and cuts for poultry, given that it is supposed to be covered by the SA BREF when carcass production capacity exceeds 50 tonnes per day.</li> <li>• The definition of 'installation' in Article 3(3) of the IED includes directly associated activities. Further details about directly associated activities and the technical connection with an IED activity are given in a Guidance document issued by DG ENV<sup>5</sup>. Which IED Annex I activity (either point 6.4 (a) or 6.5) is connected to a specific directly associated activity can be further clarified in the proposals related to the data collection (see Section 2.3).</li> <li>• Casings and offal are typically processed in slaughterhouses, so this could be considered a directly associated activity. Their processing is described in the chapter on Applied Processes and Techniques of the current SA BREF. This can be further clarified when designing the questionnaire for the data collection.</li> <li>• IED Annex I point 6.5 activity refers to all categories of ABP. Further clarification does not seem necessary.</li> <li>• Deboning is carried out in the majority of the poultry slaughterhouses, so it could be considered a directly associated activity. This can be further clarified when designing the questionnaire for the data collection.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To keep the original EIPPCB proposal unchanged, except for editorial improvements: 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 or of cuts for poultry.</li> </ul>

<sup>5</sup> Guidance on interpretation of 'installation' and 'operator' for the purposes of the IPPC Directive, Version 1, April 2007, [http://ec.europa.eu/environment/archives/air/stationary/ippc/pdf/installation\\_guidance.pdf](http://ec.europa.eu/environment/archives/air/stationary/ippc/pdf/installation_guidance.pdf).

2.1.2.2 LCP BREF and MCP Directive

<b>Original EIPPCB proposal</b>
Proposal 5: The EIPPCB proposes to exclude from the scope of the SA BREF on-site combustion plants generating hot gases that are not used for direct contact heating, drying or any other treatment of objects or materials.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 16 out of 24 IPs agree with the proposal, 7 partly agree, 1 does not provide an answer.</li> <li>• The main comments of the IPs which agree or partly agree are as follows:             <ul style="list-style-type: none"> <li>- Include boilers where animal by-products are combusted (AT).</li> <li>- Include combustion plants that are also used to treat waste gases (DE, IT, EFPRA, EUfishmeal).</li> <li>- Clarify if combustion plants treating odorous process air streams are included in the scope (DK).</li> <li>- Define or describe the terms "on-site" and "combustion plant" (SE).</li> <li>- Add to the scope of the SA BREF: "As regards using animal waste as fuel, the scope is limited to plants treating only animal carcasses or are dedicated to incinerate animal waste, and this independent of whether the heat is used for producing heat, or electricity or is not used at all" (SE).</li> <li>- Clarify which BREF is relevant for the combustion of tallow as well as of meat-and-bone meal (MBM) as fuel, e.g. in power plants, steam raising plants or CHP plants, where these fuels are used exclusively (EFPRA).</li> <li>- Include the combustion of tallow in the scope (AT, DE).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the proposal.</li> <li>• Proposal 5 relates only to emissions from combustion plants, in particular from process furnaces. There do not seem to be examples of process heaters that are used in the SA sector.</li> <li>• Combustion plants with a rated thermal input equal to or greater than 1 MW are covered by the scope of the LCP BREF or Directive EU/2015/2193 (MCP Directive). This includes cases where waste gases are used as fuel.</li> <li>• The LCP BREF does not cover combustion plants using waste listed in Article 42(2)(a)(ii) as a fuel (animal carcasses). The dedicated incineration of carcasses is proposed to be covered in the SA BREF (see Section 2.1.2.4).</li> <li>• The terms ‘combustion plant’, ‘waste incineration plant’ and ‘waste co-incineration plant’ are defined in Directive 2010/75/EU.</li> <li>• Burning of non-condensable gases in dedicated equipment is considered thermal oxidation and is proposed to be included to the SA BREF.</li> <li>• MBM and fats are primary products made from ABP and they are considered fuels. Thus, their combustion is covered either by the LCP BREF or by the MCP Directive.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To keep the original EIPPCB proposal unchanged: to exclude from the scope of the SA BREF on-site combustion plants generating hot gases that are not used for direct contact heating, drying or any other treatment of objects or materials.</li> </ul>

2.1.2.3 WT BREF

<b>Original EIPPCB request</b>
Request 2: TWG members are asked to identify activities related to disposal or recycling of animal carcasses or of animal waste that could be covered by the scope of the WT BREF.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• Specific technical aspects, if any, of composting and anaerobic digestion of animal by-products should be included in the scope of the SA BREF (DE).</li> <li>• Clarify which BREF is relevant for anaerobic digestion and composting (PT).</li> <li>• Anaerobic digestion is covered by the scope of the WT BREF (DK, ES, FI, EBA).</li> <li>• Anaerobic digestion should be excluded from the scope of the SA BREF (CLITRAVI).</li> <li>• Anaerobic digestion from Category 2 ABP is covered by the WT BREF and the EU ABP Regulation (IE).</li> <li>• Anaerobic digestion from Category 2 ABP should not be covered by the WT BREF (CLITRAVI, UECBV).</li> <li>• Include anaerobic digestion in the scope of the SA BREF when the capacity is below the threshold indicated in the scope of the WT BREF (BE, IT, SE).</li> <li>• Composting and anaerobic digestion of ABP should be included in the scope of the SA BREF (EFPRA).</li> <li>• Composting is covered by the scope of the WT BREF (BE, DK, SE).</li> <li>• Landspreading and land injection of sludge from WWTPs and of other liquids (e.g. blood) generated from SA activities should be covered by the WT BREF (UK, EFPRA).</li> <li>• Exclude the disposal or recovery of animal waste covered by the scope of the WT BAT conclusions (SE).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The scope of the current SA BREF includes landspreading of waste water, land injection of ABP, biogas production and composting.</li> <li>• The scope of the WT BREF excludes the disposal or recycling of animal carcasses or of animal waste covered by the activity description in Section 6.5 of Annex I to Directive 2010/75/EU <b>when</b> this is covered by the SA BREF. Therefore, anaerobic digestion and composting could be included in the scope of the SA BREF. It will be up to the TWG to take this decision.</li> <li>• Anaerobic digestion and composting processes can be present in slaughterhouses as directly associated activities. These processes might also be present in ABP installations falling under point 6.5 of Annex I to the IED.</li> <li>• The capacity threshold for the disposal or recycling of animal carcasses or animal waste under point 6.5 of Annex I to the IED is 10 tonnes per day, while the threshold for the disposal or recovery of non-hazardous waste under point 5.3 (a) of Annex I to the IED is 50 tonnes per day.</li> <li>• Due to the close connection of anaerobic digestion and composting to SA activities and due to the aforementioned different thresholds, it seems better not to exclude anaerobic digestion and composting of materials from animal origin from the scope of the SA BREF.</li> <li>• Landspreading of waste water is not included in the scope of the WT BREF. Landspreading of waste water can be an activity directly associated to the installation, in line with the definition of ‘installation’ given in the IED. It is for the competent authority to assess on a case-by-case basis whether landspreading is carried out on site, and therefore constituting part of the ‘installation’.</li> <li>• Land injection of ABP does not seem to be a common practice and is forbidden in some MS.</li> <li>• Landfilling is an IED Annex I activity (point 5.4), although it has not been covered by any BREF.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To exclude landfilling and land injection of animal by-products from the scope of the SA BREF.</li> </ul>

2.1.2.4 WI BREF

<b>Original EIPPCB request</b>
Request 3: TWG members are asked to provide examples of IED installations for incineration of animal by-products mixed with other type of wastes.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• The combustion of tallow and the dedicated incineration of MBM should be in the scope of the SA BREF, although combustion or co-combustion of tallow or MBM as a fuel could be excluded when this is in accordance with Commission Regulation (EU) No 142/2011 and the interface with the WI BREF (DE).</li> <li>• ABP not exceeding 2 kg disposed of in waste incineration or co-incineration plants; animal fat co-incinerated in ceramic plants (DK).</li> <li>• MBM is co-incinerated in cement kilns (DK, ES, IE, PT, EFRA).</li> <li>• Incineration of municipal waste including animal waste; dead animals co-incinerated with biomass in livestock farms (SE).</li> <li>• Clarify whether waste co-incineration and/or incineration is covered by the scope of the SA BREF (SE).</li> <li>• Installations burning ABP generating heat for processes are under EU ABP Regulation and should be covered by the scope of the WI BREF (CLITRAVI, UECBV).</li> <li>• The combustion of tallow and MBM is not a waste incineration process (EFRA).</li> <li>• Incineration of medical research waste containing ABP; pet crematoriums (incineration); fluidised bed incinerators using MBM mixed with other waste as fuel (EFRA).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The scope of the current SA BREF specifies: ‘The dedicated incineration of carcasses, parts thereof and MBM and burning of tallow, are covered principally as routes for disposal.’</li> <li>• MBM and fat are primary products made from ABP and are considered fuels. The combustion of fuels in plants with a rated thermal input equal to or greater than 1 MW is covered either by the LCP BREF or by the MCP Directive.</li> <li>• The dedicated incineration of carcasses can sometimes be carried out on farms.</li> <li>• Incineration and co-incineration of waste is normally covered by the scope of the WI BREF.</li> <li>• The scope of the Final Draft of the revised WI BREF excludes the treatment of waste in plants covered by Article 42(2) of Directive 2010/75/EU. Point (iii) of Article 42(2) refers to plants treating only animal carcasses as regulated by Regulation (EC) No 1774/2002.</li> <li>• Regulation (EC) No 1774/2002 has been repealed and replaced by Regulation (EC) No 1069/2009.</li> <li>• ‘Carcase’ is defined in Regulation (EC) No 853/2004 as the body of an animal after slaughter and dressing.</li> <li>• The scope of the CLM BREF covers ‘The production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other kilns with a production capacity exceeding 50 tonnes per day’, including ‘fuels–storage and preparation’ and the ‘use of waste as raw materials and/or fuels, quality requirements, control and preparation’.</li> <li>• The scope of the CER BREF covers ‘Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day, and/or with a kiln capacity exceeding 4 m<sup>3</sup> and with a setting density per kiln exceeding 300 kg/m<sup>3</sup>’ including ‘kiln firing to achieve vitrification’.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• 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).</li> <li>• To exclude the combustion of animal fat and MBM from the scope of the SA BREF unless the hot gases from combustion are used for direct contact heating, drying or any other treatment of objects or materials in the SA plant.</li> </ul>

### 2.1.3 Additional installations/activities to be covered/excluded from the scope of the SA BREF

<b>Original EIPPCB proposal</b>
None.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• Include washing facilities (CLITRAVI).</li> <li>• Include on-site pretreatment of waste water before indirect discharge (DK).</li> <li>• Include cleaning of casings and handling of red and white offal under IED Annex I point 6.4 (a) (DK, CLITRAVI).</li> <li>• Viscera treatment should be included and it should be clarified if it falls under point 6.4 (a) or 6.5 of IED Annex I (DE).</li> <li>• The salting of hides and skins should be included. The interface with the TAN BREF should be defined and it should be clarified if it falls under point 6.4 (a) or 6.5 of IED Annex I (DE).</li> <li>• Include cooling processes that are not covered by the ICS BREF (DK, ES, CLITRAVI, UECBV).</li> <li>• Exclude the manufacture of biodiesel from ABP fats, as it is covered by the LVOC BREF (ES, PT, EFPRA).</li> <li>• Exclude the production of animal feed, the incineration/co-incineration of biofuels, waste incineration/co-incineration plants which incinerate municipal waste, and landfill of animal waste (SE).</li> <li>• Boilers should be excluded from the scope of the SA BREF (CEFIC).</li> <li>• The following installations/activities should be excluded from the scope of the SA BREF (EFPRA): <ul style="list-style-type: none"> <li>- installations for the collection of ABP raw materials (without processing) and derived product storage installations;</li> <li>- treatment and processing of animal hides and skins;</li> <li>- manufacture of fertilisers from ABP-derived products (because it involves only mixing and blending activities);</li> <li>- burning of animal carcasses on open pyres and huge animal graves.</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• Generic aspects of cooling systems are covered by the ICS BREF and overlaps should be avoided in the review of the SA BREF. The ICS BREF does not cover issues specific to individual industrial sectors.</li> <li>• In the current ICS BREF, the term ‘cooling systems’ refers only to systems to remove waste heat from any medium, using heat exchange with water and/or air. The use of refrigerants such as ammonia and CFCs is not covered by the scope of the ICS BREF.</li> <li>• Handling of casings and offal (viscera) as well as treatment of hides and skins are typically carried out in slaughterhouses, and thus could be considered directly associated activities. They are described in the chapter on Applied Processes and Techniques of the current SA BREF. This can be further clarified in the proposals related to the data collection (see Section 2.3).</li> <li>• The definition of installation in the IED includes directly associated activities. An activity (e.g. washing facilities, on-site WWTP) with a technical connection to an activity listed in points 6.4 (a) and/or 6.5 of IED Annex I could be considered a directly associated activity as per Article 3(3) of the IED. Further details about directly associated activities and the technical connection with an IED activity are given in a Guidance document issued by DG ENV<sup>5</sup>.</li> <li>• The scope of the FDM BREF does not address the production of primary products from ABP, given that it is supposed to be covered by the SA BREF when the treatment capacity exceeds 10 tonnes per day (see Section 2.1.1). Animal feed may be a primary product from ABP.</li> <li>• The production of biodiesel using animal fat is commonly carried out in dedicated chemical installations. Further clarification in the scope of the SA BREF does not seem</li> </ul>



necessary.

- Boilers, combustion of biofuels and incineration of municipal waste are covered by other BREFs (see Sections 2.1.2.2 and 2.1.2.4). Further clarification in the scope of the SA BREF does not seem necessary.
- There are examples of installations processing ABP whose products (e.g. MBM) can be directly used as fertilisers. Fertilisers are commonly manufactured in dedicated chemical installations. Further clarification in the scope of the SA BREF does not seem necessary.
- Landfilling is assessed in Section 2.1.2.3.
- Installations dedicated to the storage of ABP with a capacity exceeding 10 tonnes/day can be covered by the scope of the SA BREF. Storage is one of the possible operations for disposal of waste, according to Annex I to the Waste Directive.

**EIPPCB proposal**

- 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.

## 2.2 Key environmental issues (KEIs) for the SA BREF

### 2.2.1 Overview

With a view to an increased effectiveness of the Sevilla process, the so-called focused approach and the front-loading of the information exchange were presented to stakeholders by the Commission at the IED Article 13 Forum meeting in June 2013<sup>6</sup>.

At the Forum meeting in 2015<sup>7</sup>, the Commission presented the following criteria for defining KEIs at the earliest possible stage of the information exchange for reviewing a BREF:

- **Criterion 1: environmental relevance of pollution** caused by the activity or process, i.e. whether it may cause an environmental problem or contribute to a specific severe problem;
- **Criterion 2: significance of activity** (number of installations, geographical spread, contribution to total (industrial) emissions in the EU);
- **Criterion 3:** potential of the BREF review for identifying **new or additional techniques** that would further significantly reduce pollution;
- **Criterion 4:** potential of the BREF review to set **BAT-AELs** that would significantly improve the level of environmental protection compared to current emission levels.

Based on the information currently available and on the IPs received, the EIPPCB has used the four criteria mentioned above to assess candidate KEIs in this Background Paper.

#### Criterion 1

As explained in the call for IPs, a number of available sources allowed the assessment of Criterion 1 regarding the environmental relevance of pollutants emitted to air and to water. The EIPPCB screened these sources, which resulted in a preliminary list of possible pollutants (i.e. candidate KEIs) presented in Annex 3 of the call for IPs.

Based on the information provided with the IPs, this Background Paper aims at assessing the environmental relevance of the candidate KEIs, i.e. whether they are relevant for the SA sector and for which process(es), as well as whether they are related to environmental problems.

#### Criterion 2

The assessment of Criterion 2 is more difficult as little information is available about the quantities emitted to air and to water. For instance, only a limited number of slaughterhouses have reported emissions to the E-PRTR database, possibly because the emissions are below the reporting thresholds, which implies that E-PRTR data need to be interpreted carefully. Based on information in the E-PRTR, slaughterhouses represent a very small share of the total industrial emissions for most of the pollutants reported (i.e. below 0.5 %), with the exception of HFC and HCFC emissions to air, and chloride emissions to water, which represent up to 4.5 % of the total emissions of each pollutant. E-PRTR data suggest that the slaughterhouse sector is a minor contributor to the overall industrial pollution in the EU.

#### Criteria 3 and 4

Among the four criteria to identify KEIs, Criteria 3 and 4 are the ones which are most difficult to assess, as they rely on projections for the future. Nevertheless, some information is available regarding new techniques and current legislation.

In particular, when pollutants are covered by national regulations, they are included in a monitoring plan and thus there is potential to collect data and then to set BAT-AELs. Those BAT-AELs could have the potential to improve the current state-of-play at European level as the BAT-AELs in the current SA BREF do not have the same legally binding status as BAT-AELs in BAT conclusions adopted under the IED.

---

<sup>6</sup> IED Article 13 Forum meeting of 6 June 2013, <https://circabc.europa.eu/w/browse/77c81228-4492-4348-9b3f-299ee5ecca93>

<sup>7</sup> IED Article 13 Forum meeting of 19 October 2015, <https://circabc.europa.eu/w/browse/33cff69c-bfd0-49e7-8f19-f75a9e062745>

In order to prepare the call for IPs, the EIPCCB screened a number of permits of installations permitted under points 6.4 (a) and 6.5 of IED Annex I (from EL, ES, FR, IE, IT and PT) as well as a number of national regulations/guidances (from AT, DE, DK, ES, FI, FR, IE, SE and UK). This initial screening, together with the information provided, allowed insights into the availability of data.

**EIPPCB assessment**

The IPs and proposals for candidate KEIs have been assessed by the EIPPCB. This assessment and the subsequent EIPPCB proposals are presented in the following sections:

- Candidate KEIs related to emissions to water: Sections 2.2.2 and 3.3.1;
- Candidate KEIs related to emissions to air: Sections 2.2.3 and 3.3.2;
- Candidate KEIs related to energy consumption and energy efficiency: Section 2.2.4;
- Candidate KEIs related to water consumption and to the amount of waste water discharged: Section 2.2.5.

Each assessment is followed by a proposal on whether a parameter, a substance or a group of substances should be considered a KEI for the review of the SA BREF or not. For KEIs, data on emissions to air and/or water will be collected through plant-specific questionnaires with the aim of deriving BAT-AELs. For non-KEIs, no data will be collected through the questionnaires and BAT-AELs will not be set, although information on associated techniques can be provided by the TWG as bulk information (see Section 2.4).

The EIPPCB also proposes to collect data for other parameters for which the aim is not to derive BAT-AELs, because this contextual information is needed to better understand the performances of the abatement techniques used.

**2.2.2 Emissions to water**

**2.2.2.1 EIPPCB proposals**

**2.2.2.1.1 Zinc (Zn)**

<b>Original EIPPCB proposal</b>
To include zinc (Zn) as a KEI for pig slaughterhouses installations.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 8 out of 24 IPs agree with the proposal, 3 partly agree, 8 disagree and 5 do not provide answers.</li> <li>• The main comments of the IPs are as follows:             <ul style="list-style-type: none"> <li>- Zinc is used in feed for piglets, but not for fattening pigs (DK, IE, CLITRAVI, UECBV).</li> <li>- Zinc seems to be a minor issue for emissions to water since BAT for animal reception and lairage is dry cleaning before washing. Knowledge (references) and data on zinc emissions are very limited (DK).</li> <li>- Zinc is generally measured in waste water discharges from pig slaughterhouses (BE, IT).</li> <li>- There is other European legislation that controls zinc levels in pig feed. The IRPP BREF did not identify zinc as a KEI. Data is not available (UK).</li> <li>- High levels of zinc have not been monitored (CZ).</li> <li>- Zinc is used as feed supplement for pigs (DE, FR) and poultry (FR).</li> <li>- Consider zinc as a contextual parameter (DE, FI).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The IRPP BREF indicates that livestock manures, and pig slurry in particular, contain significant amounts of zinc because zinc-containing compounds are used in high concentrations as feed additives for pigs (weaners, sows, fattening pigs).</li> <li>• According to the IPs, zinc is monitored in 5 MS, so there may be data available.</li> </ul>

- The maximum zinc content in the pig diet is 150 mg/kg according to Commission Regulation (EC) No 1334/2003. Commission Implementing Regulation (EU) 2016/1095 mentions the environmental impact of drainage and run-off of zinc to surface water and the EFSA recommendation to decrease the maximum content of zinc in complete feed for several animal species.
- According to the 2016 INERIS report on hazardous substances in industrial waste water (available in BATIS), the average Zn level at the point of discharge of waste water of 195 slaughterhouses in France is 348 µg/l.
- It is not clear if dry cleaning is generally performed in all pig lairage facilities. Washing of the lairage area after dry cleaning could lead to zinc emissions to water.
- A downstream urban waste water treatment plant is usually not designed or equipped appropriately to abate zinc.

#### EIPPCB proposal

- To keep the original EIPPCB proposal unchanged, except for editorial improvements: to include zinc (Zn) as a KEI for pig slaughterhouses, both for direct and indirect discharges.

### 2.2.2.1.2 Contextual parameters

#### Original EIPPCB proposal

To include in the questionnaires the following pollutants and parameters not as a KEI but as contextual information of the waste water treatment:

- pH;
- temperature;
- BOD<sub>5</sub>;
- ammonium-N;
- fats, oil and grease (FOG);
- chloride (in slaughterhouses performing hides/skins salting).

#### Summary of IPs

- pH: 9 out of 24 IPs agree with the proposal, 3 partly agree, 10 disagree and 2 do not provide answers. The main comments of the IPs are as follows:
  - Include it as a KEI (AT, DK, FI, IE, IT, NL, NO, PT, EFPRA, EUfishmeal).
  - pH changes are significant due to weather conditions (CZ).
- Temperature: 12 out of 24 IPs agree with the proposal, 1 partly agrees, 9 disagree and 2 do not provide answers. The main comments of the IPs are as follows:
  - Include it as a KEI (AT, DK, FI, IE, IT, NL, NO, EUfishmeal).
  - Parameter not monitored (PT).
  - Temperature varies with ambient conditions (EFPRA).
- BOD<sub>5</sub>: 13 out of 23 IPs agree with the proposal, 2 partly agree, 7 disagree and 2 do not provide answers. The main comments of the IPs are as follows:
  - Include it as a KEI (AT, DK, IE, IT, NO, UK, EUfishmeal).
  - BOD<sub>5</sub> could be an alternative KEI to COD for direct discharges (DK).
  - BOD<sub>5</sub> takes 5 days to measure and is not useful to manage the WWTP (EFPRA).
  - BOD<sub>7</sub> is more used in Finland (FI).
  - BOD<sub>5</sub> should be considered a more relevant KEI than COD (NO, EFPRA, EUfishmeal).
- Ammonium-N: 8 out of 24 IPs agree with the proposal, 2 partly agree, 12 disagree and 2 do not provide answers. The main comments of the IPs are as follows:
  - Include it as a KEI (AT, CZ, DE, DK, FI, IE, NL, NO, UK, CEFIC, EFPRA).
  - TN is a more appropriate KEI (EUfishmeal).
  - Include it in the data collection and decide later if it should be considered a KEI (IT).
  - Parameter not monitored (PT).
- Fats, oil and grease (FOG): 10 out of 24 IPs agree with the proposal, 4 partly agree, 8 disagree and 2 do not provide answers. The main comments of the IPs are as follows:
  - Include it as a KEI (AT, DK, FR, IE, NL, NO, PT, EUfishmeal).
  - FOG inlet concentration to the WWTP should be controlled (CZ).

- Chloride: 9 out of 24 IPs agree with the proposal, 4 partly agree, 8 disagree and 4 do not provide answers. The main comments of the IPs are as follows:
  - Include it as a KEI (AT, DK, FR, IE, NL, PL, PT).
  - It is not relevant as contextual information or as a KEI (CLITRAVI, UECBV).
  - Treatment of hides/skins is rarely performed in slaughterhouses. There are significant chloride emissions from the use of hydrochloric acid in the processing of bones in gelatine manufacturing. This should be monitored and could be a KEI (DE).
  - Include it in the data collection and decide later if it should be considered a KEI (IT, UK).
  - The share of installations that measure and have representative data for non-KEIs can be very limited (ORGALIME).

**EIPPCB assessment**

- The aim of collecting data at the levels of these substances and parameters is to gather contextual information to assess the performance of the waste water treatment, when analysing information on KEIs. The aim is not to derive BAT-AELs for these substance and parameters.
- As pointed out by some IPs, data may not be widely available for some substances and parameters, but it should not preclude data from being collected, even in limited amounts, as it may be useful to analyse data related to KEIs.
- Biodegradable compounds covered by BOD are a subset of all organic matter present in the waste water. BOD is therefore included in the parameter COD/TOC.
- The measurement uncertainty for BOD is higher than for COD/TOC and the monitoring result is only available several days after sampling.
- Low emission values of organic substances could be ensured without using BOD for setting permit conditions.
- Both BOD<sub>5</sub> and BOD<sub>7</sub> can be useful to assess the efficiency of a WWTP.
- No BAT-AEL for pH was set in recent BREFs. Instead, pH is one of the key process parameters (like temperature and BOD for example) to be monitored at key locations of the waste water stream (e.g. BAT 3 in the WT BREF, BAT 2 in the CWW BREF, or BAT 3 in the final draft of the FDM BREF).
- FOG is covered by the parameter COD/TOC. There is no EN or ISO standard to monitor FOG. FOG is monitored in some MS by using different national methods.
- The parameter ammonium nitrogen is covered by the parameter TN, but it can be used to assess the nitrification efficiency of the WWTP.
- High levels of chloride may influence the nitrification efficiency of the WWTP.
- Chloride may be present in waste water generated from gelatine manufacturing due to the use of hydrochloric acid.

**EIPPCB proposal**

- To change the original EIPPCB proposal as follows: To include in the questionnaires the following substances and parameters not as KEIs but as contextual information:
  - pH (for direct discharges; for indirect discharges from pig slaughterhouses, slaughterhouses performing hide/skin salting, gelatine manufacturing installations and rendering installations);
  - temperature (for direct discharges only);
  - BOD<sub>5</sub> or BOD<sub>7</sub> (for direct discharges only);
  - ammonium-N (for direct discharges only);
  - chloride (in slaughterhouses performing hide/skin salting and in gelatine manufacturing installations, for both direct and indirect discharges).

## 2.2.2.2 Other proposals from TWG members

<b>Original EIPPCB request</b>
Request 5: TWG members are asked to provide initial positions on additional candidate KEIs for emissions to water, if any, accompanied by a rationale addressing the criteria mentioned in Section 3.1. Information on emission limit values set in permits and monitoring (e.g. standards used) of these additional candidate KEIs is also expected.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• Include AOX as a KEI for slaughterhouses and ABP installations, relevant for measuring cleaning agents in waste water (AT, SE).</li> <li>• Include AOX as a KEI for slaughterhouses and ABP installations. Do not collect AOX emission data, but information on how to minimise the use of disinfectants containing (organic) halides (DE).</li> <li>• Include copper as a KEI for pig slaughterhouses (BE, DE, SE).</li> <li>• Include copper as a KEI for slaughterhouses (FR, PT).</li> <li>• Include anionic, non-ionic and cationic detergents/surfactants as a KEI for slaughterhouses and ABP installations (BE, IT).</li> <li>• Include cobalt as a parameter for contextual information in the data collection for slaughterhouses and ABP installations (BE).</li> <li>• Include antibiotic-resistant bacteria as a parameter for contextual information in the data collection for slaughterhouses (DE).</li> <li>• Include as parameters for contextual information in the data collection (DK): <ul style="list-style-type: none"> <li>- dimethylamine (DMA) and trimethylamine (TMA) can inhibit the nitrification process in the WWTPs;</li> <li>- automation level as relevant for consumption of water and energy in slaughterhouses.</li> </ul> </li> <li>• Include nitrite as a KEI for slaughterhouses and ABP installations (NL).</li> <li>• Include molybdate-reactive phosphorus (orthophosphate) as a KEI for slaughterhouses and ABP installations (IE).</li> <li>• Include sulphate as a KEI (IT, NL) or as a parameter for contextual information in the data collection for slaughterhouses and ABP installations (SE, UK).</li> <li>• Indirect discharges should have the same KEIs as direct discharges for slaughterhouses and ABP installations (NL, SE).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The current SA BREF contains a BAT conclusion to avoid, where possible, the use of cleaning and disinfection agents containing active chlorine. According to the IPs, AOX is monitored in AT and in some ABP installations in FR. The AOX emission levels reported in the current SA BREF and in the AT report 'State of the art of the Slaughter and Animal By-Products Industries' are usually below 0.05 mg/l as a daily average or below 0.1 kg/day.</li> <li>• The maximum copper content in the pig diet is 170 mg/kg for piglets and 25 mg/kg for other pigs according to Commission Regulation (EC) No 1334/2003. Copper emission levels (58 µg/l as the average of 195 slaughterhouses) are lower than those of zinc (348 µg/l as the average of 195 slaughterhouses), according to the 2016 INERIS report on hazardous substances in industrial waste water (available in BATIS). The corrosion of pipes and equipment can also be a source of copper in waste water. According to the IPs, copper is monitored in BE and FR.</li> <li>• There are many types of detergents frequently used in SA activities, which can be monitored using for example EN 903:1993 (determination of anionic surfactants). The current SA BREF contains several BAT to reduce the environmental impact of cleaning, but it does not report actual emission levels or set BAT-AELs for detergent emissions. According to the IPs, detergents are monitored in BE and IT.</li> <li>• It is not clear how cobalt emissions could be related to SA activities.</li> <li>• DMA and TMA are volatile substances originating from the decomposition of fish. They can be present in waste water, as reported in the current SA BREF. According to the IPs,</li> </ul>

DMA and TMA are not monitored in MS.

- The level of automation varies hugely among SA installations and the processing steps in a particular installation. It is difficult to quantify the automation level on a comparable scale. Techniques to reduce water and energy consumption with different automation levels are addressed in the corresponding sections of the SA BREF.
- The parameter TN (proposed as a KEI in Section 3.3.1.3) includes nitrite.
- The parameter TP (proposed as a KEI in Section 3.3.1.4) includes all organic and inorganic (including orthophosphates) phosphorus compounds, dissolved or bound to particles.
- Sulphate in elevated concentrations is toxic to freshwater organisms and also a potential source of corrosion problems in sewers, when converted into sulphide. Sulphide is mentioned in the current SA BREF as a relevant issue related to feather and hair rendering. Monitoring of sulphate is carried out in IT and UK.
- A downstream urban waste water treatment plant is usually not designed or equipped appropriately to abate sulphate.
- According to the European Union Strategic Approach to Pharmaceuticals in the Environment (COM(2019) 128 final), the European Commission should ensure that the emission of pharmaceuticals to water is considered a possible KEI. This Strategic Approach is a component of the European One Health Action Plan against Antimicrobial Resistance (AMR) (COM/2017/0339 final), where there is a Commission commitment to support the development of technologies that enable efficient and rapid degradation of antimicrobials in waste water and the environment and reduce the spread of AMR. The information sources for the review of the SA BREF do not contain evidence of the release of pharmaceuticals or antimicrobials from SA installations. The European One Health Action Plan against AMR highlights the need for research into and the development of new tools for monitoring antimicrobials and microorganisms resistant to antimicrobials in the environment.

#### **EIPPCB proposal**

- Do not include as a KEI for slaughterhouses and animal by-product installations the following pollutants and parameters: AOX, copper, detergents, cobalt, antimicrobial-resistant bacteria, DMA and TMA, level of automation, nitrite, pharmaceuticals and reactive phosphorus.
- To include in the questionnaires sulphate not as a KEI but as contextual information for rendering installations, for both direct and indirect discharges.
- The TWG to collect information on emissions of pharmaceuticals and of microorganisms resistant to antimicrobials as well as on techniques to reduce such emissions.

## 2.2.3 Emissions to air

## 2.2.3.1 EIPPCB proposals

## 2.2.3.1.1 All installations

## 2.2.3.1.1.1 Odour

Original EIPPCB proposal			
To include odour as a KEI together with the main sources:			
KEI	IED activity	Type of installation	Process
Odour	Slaughterhouses	All animals	Animal reception and lairage
			Scalding
			Storage and handling of animal by-products
		Pigs	Singeing
	Animal by-products installations	Rendering	Storage and handling of animal by-products
			Rendering process
		Fat melting	Storage and handling of animal by-products
			Dry melting process
		Fishmeal and fish oil production	Storage and handling of animal by-products
		Blood processing/Production of plasma	Storage and handling of animal by-products
			Blood tanks
		Bone processing	Storage and handling of animal by-products
		Gelatine manufacturing	Storage and handling of animal by-products
		Incineration of animal by-products	Storage and handling of animal by-products
		Summary of IPs	
<b>All processes</b>			
<ul style="list-style-type: none"> <li>Odour is an environmental issue for the SA industries, especially when located close to sensitive receptors (AT, IE).</li> <li>Include odour as a KEI, but do not derive BAT-AELs, rather focus on odour abatement efficiencies. NH<sub>3</sub> and H<sub>2</sub>S can be monitored alternatively (BE).</li> </ul>			



- Olfactometric measurements of major odour emissions should be performed after complaints and not routinely (DE).
- Do not derive BAT-AELs for odour emissions; odour should be regulated at a local level (see EU Parliament Petition No 0884/2016). Information on techniques can be collected (DK, ES, NL, CLITRAVI, UECEBV).
- Odour is not a KEI. It is a local, social and/or psychological issue (AVEC, ORGALIME).
- Data should be based on the monitoring standard EN 13725 (ES).
- Define odour as a general KEI. It is not always possible to set a BAT-AEL (FI).
- Odour is a potential KEI, but the applicability for individual BAT conclusions in relation to odour should be restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated; conditions in permits regarding odour do not prescribe any ELVs or monitoring requirements (SE).
- Sampling and measurement methods vary between EU Member States (CLITRAVI).
- Conditions in ABP permits regarding odour do not prescribe any ELVs (IT, SE).
- Include an odour management plan as mandatory for SA installations (IE).
- It seems difficult to separate emissions from each step of the ABP process. Odour is monitored at the outlet of the waste gas treatment in the case of cold waste gases (FR).
- Due to the inherent nature of the materials being processed, these processes can be odorous and controls are required to prevent and minimise odour emissions. Permits rarely require routine olfactometric measurements. It is difficult to monitor diffuse sources (EFPRA).

### **Slaughterhouses**

#### **Animal reception and lairage**

- 10 out of 24 IPs agree with the proposal, 4 partly agree, 3 disagree and 7 do not provide answers.
- The main comments of the IPs are as follows:
  - Odour emissions from outdoor facilities are not channelled and therefore not measurable. Emissions from cattle areas are limited (DK).
  - Lairage is open to air and animals remain in this area for a limited time (FR).
  - There is an inevitable odour associated with live animals and there is a limit to the controls and techniques that a facility can use upon reception of animals (UECEBV).

#### **Scalding**

- 7 out of 24 IPs agree with the proposal, 6 partly agree, 3 disagree and 8 do not provide answers.
- The main comments of the IPs are as follows:
  - The extent to which odour from scalding is a KEI depends on the design of the scalding tank (covered or not) (DK).
  - Odour emissions are only relevant for pig and poultry slaughterhouses (UK).

#### **Storage and handling of animal by-products**

- 13 out of 24 IPs agree with the proposal, 4 partly agree, 2 disagree and 5 do not provide answers.
- The main comments of the IPs are as follows:
  - The air streams from the whole slaughterhouse are often collected and emitted through a common stack (DK).
  - Odour emissions may arise from storage due to the organic nature of the materials (IT).
  - Odour is a KEI, but the associated monitoring is difficult since emissions originate from diffuse sources (FR).

#### **Singeing (pigs)**

- 8 out of 24 IPs agree with the proposal, 5 partly agree, 1 disagrees and 10 do not provide answers.
- The main comments of the IPs are as follows:

- Odour from singeing depends on the speed of slaughtering and singeing (DK).
- Singeing is performed in a dedicated closed area. Odour is not emitted and cannot be perceived in the surroundings (FR).

### **Rendering**

#### **Storage and handling of animal by-products**

- 14 out of 24 IPs agree with the proposal, 2 partly agree and 8 do not provide answers.

#### **Rendering process**

- 13 out of 24 IPs agree with the proposal, 2 partly agree and 9 do not provide answers.

### **Fat melting**

#### **General**

- Raw materials in fat melting are less odorous and the odour is less offensive (DE, EFPPRA).

#### **Storage and handling of animal by-products**

- 10 out of 24 IPs agree with the proposal, 2 partly agree, 1 disagrees and 11 do not provide answers.

#### **Dry melting process**

- 10 out of 24 IPs agree with the proposal, 2 partly agree, 1 disagrees and 11 do not provide answers.

### **Fishmeal and fish oil production**

- 11 out of 24 IPs agree with the proposal, 3 partly agree and 10 do not provide answers.
- The main comments of the IPs are as follows:
  - Odour is a local issue. No BAT-AELs should be derived (DK, ES, NL, EUfishmeal).
  - The production of fishmeal is much more odorous than that of fish oil (EFPPRA).

### **Blood processing/Production of plasma**

#### **General**

- Odour is an issue due to the inherent nature of the materials being processed (DE, EFPPRA).
- The storage of blood is particularly odorous (IT).
- Blood processing does not lead to odour emissions (CLITRAVI, UECEBV).
- Odour from blood processing is a KEI in slaughterhouses, especially those close to sensitive receptors (AT).

#### **Storage and handling of animal by-products**

- 8 out of 24 IPs agree with the proposal, 2 partly agree, 2 disagree and 12 do not provide answers.

#### **Blood tanks**

- 8 out of 24 IPs agree with the proposal, 2 partly agree, 2 disagree and 12 do not provide answers.
- Odour from the storage of blood is not a KEI. A proper cleaning of the blood tanks should be ensured (CLITRAVI, UECEBV).

### **Bone processing**

- 8 out of 24 IPs agree with the proposal, 3 partly agree, 1 disagrees and 12 do not provide answers.
- The main comments of the IPs are as follows:
  - Consider odour emissions from the whole process. Odour emissions are generally diffuse (IT).
  - Raw materials in bone processing are less odorous and the odour is less offensive (DE, EFPPRA).

- Related odour emissions are normally diffuse and the associated monitoring is difficult (FR).

#### **Gelatine manufacturing**

- 7 out of 24 IPs agree with the proposal, 2 partly agree, 2 disagree and 13 do not provide answers.
- The main comments of the IPs are as follows:
  - Raw materials in gelatine manufacturing are less odorous and the odour is less offensive (DE, EFPRA).
  - No significant odour releases occur, as no carcasses are processed on gelatine production sites (CEFIC).

#### **Incineration of animal by-products**

- 9 out of 24 IPs agree with the proposal, 2 partly agree and 13 do not provide answers.
- The main comments of the IPs are as follows:
  - Due to the inherent nature of the materials being processed, the storage and handling of ABP can be odorous (DE, EFPRA).

#### **Additional proposals by TWG members**

- Regarding odour from WWTPs in slaughterhouses and ABP installations:
  - Collect only contextual information (BE).
  - Include it as a KEI (IE).
- Include odour as a KEI for WWTPs of rendering installations and fishmeal and fish oil installations (UK).
- Also, include H<sub>2</sub>S as a KEI for the rendering process; it is an odour and sulphur presence indicator (ES, FR, PT).

#### **EIPPCB assessment**

- The majority of IPs support the EIPPCB proposal.
- The current SA BREF addresses odour as a relevant issue for SA installations and contains several BAT conclusions to prevent and reduce odour emissions.
- In recent BAT conclusions (e.g. WT and FDM BREF), the applicability of an odour management plan is usually related to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated, while the applicability of other techniques to reduce odour emissions is generally based on the information available in the chapter on techniques to consider in the determination of BAT.
- Odour emissions are covered by the definition of ‘emission’ given in Article 3(4) of the IED. Odour is an issue addressed in various BREFs. This is also explicitly mentioned in the Commission response to EU Parliament Petition No 0884/2016.
- The impact of odour emissions depends on a number of factors including the distance to the receiver, the local meteorological conditions, the odour type, the individual perception, the hedonic tone and the emission rate.
- The BAT conclusions chapter of the WT BREF contains a BAT-AEL for channelled odour emissions (expressed in odour concentration,  $ou_E/Nm^3$ ) from the biological treatment of waste as an alternative to the BAT-AEL for ammonia (NH<sub>3</sub>) emissions.
- Diffuse odour emissions could arise from an improperly operating WWTP.
- According to the IPs, the availability of data for diffuse odour emissions seems to be limited.
- The main sources of odour in SA installations are those contained in the original EIPPCB proposal.
- Waste gas streams from different sources in slaughterhouses are often collected and emitted through a common stack. Therefore, it does not seem to make sense to differentiate between different emission sources. At a later stage, major and minor sources could be differentiated based on the reported emission rates.
- Odour emissions can be measured by using the standard EN 13725 at the outlet of an end-of-pipe technique for waste gases with a temperature up to 200 °C.

<ul style="list-style-type: none"> <li>H<sub>2</sub>S emissions can be relevant as an alternative parameter to odour in rendering installations.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>To change the original EIPPCB proposal as follows:                     <ul style="list-style-type: none"> <li>To include channelled odour emissions as a KEI for SA installations.</li> <li>To collect information on techniques to prevent and/or reduce diffuse odour emissions.</li> <li>To include channelled H<sub>2</sub>S emissions as a KEI for rendering installations.</li> </ul> </li> </ul>

2.2.3.1.1.2 HFC and HCFC

<b>Original EIPPCB proposal</b>			
To include HFC and HCFC as a KEI together with the main sources:			
KEI	IED activity	Type of installation	Process
HFC and HCFC	Slaughterhouses	All animals	Cooling systems
	Animal by-products installations	All animal by-products installations	Cooling systems
<b>Summary of IPs</b>			
<b>All installations</b>			
<ul style="list-style-type: none"> <li>Cooling systems using these refrigerants are not widely used in DE (DE).</li> <li>HFC and HCFC emissions occur during other than normal operating conditions and should be addressed by BAT for system maintenance (FR).</li> <li>There is a dedicated EU Regulation (F-gas Regulation) dealing with that issue (FI, AVEC, CLITRAVI, EFPRA, ORGALIME, UECBV).</li> <li>It is unlikely that HCFC are still in use. HFC are still in use although it should be noted that releases to air are unplanned and occur due to leaks/maintenance. Therefore, it is unlikely that BAT-AELs can be set (UK).</li> <li>Take into account refrigerants with a GWP greater than zero that are still in use in SA installations (SE).</li> <li>Fugitive emissions from refrigeration systems should also be taken into consideration (UK).</li> </ul>			
<b>Slaughterhouses</b>			
<ul style="list-style-type: none"> <li>7 out of 24 IPs agree with the proposal, 2 partly agree, 6 disagree and 9 do not provide answers.</li> <li>Define what is considered "cooling" in slaughterhouses (BE).</li> </ul>			
<b>Animal by-product installations</b>			
<ul style="list-style-type: none"> <li>8 out of 24 IPs agree with the proposal, 5 disagree and 11 do not provide answers.</li> <li>Cooling systems using refrigerants are not widely used in the ABP sector (EFPRA).</li> <li>Refrigerants are not used in fishmeal and fish oil production (DK, EUfishmeal).</li> </ul>			
<b>EIPPCB assessment</b>			
<ul style="list-style-type: none"> <li>Cooling systems refer to systems to remove heat from any medium, using heat exchange with any refrigerant to bring down the temperature of that medium.</li> <li>Cooling systems are commonly used in slaughterhouses and ABP installations.</li> <li>While existing refrigeration equipment may still contain ozone-depleting substances (ODS), the use of ODS in new equipment as well as the refilling of existing equipment with ODS is prohibited by Regulation (EC) No 1005/2009.</li> <li>Regulation (EU) No 517/2014 (F-gas Regulation) progressively limits the total amount of the most important fluorinated greenhouse gases (F-gases) that can be sold in the EU</li> </ul>			

during the period 2015 to 2030 (the F-gases concerned are listed in Annex I to the Regulation). Moreover, the use of these F-gases is banned in many new types of equipment. The Regulation also prevents emissions of these F-gases from existing equipment by requiring checks, proper servicing and recovery of the gases at the end of the equipment's life.

- The quota system introduced by Regulation (EU) No 517/2014 refers to total tonnes of CO<sub>2</sub> equivalent and does not mention specific gases or specific industrial sectors.
- However, F-gases listed in Annex II to the F-gas Regulation are only subject to reporting obligations. This includes certain HFC, HCFC, fluorinated ethers and fluorinated alcohols.
- Moreover, the restriction on the industrial uses of HFC from 1 January 2020 onwards is limited to HFC with a global warming potential (GWP) greater than 2 500 and provided that the products are not cooled to temperatures below -50 °C.
- The BAT conclusions of the revised CAK BREF (BREF published in 2013) and of the revised FDM BREF (final draft of the revised BREF published in October 2018) both contain BAT conclusions on the use of refrigerants without ozone depletion potential (ODP) and with a low GWP.
- A variety of refrigerants can be used in industrial cooling systems. Information on the use of refrigerants without ODP and with low GWP could be collected during the SA BREF review.
- The ODP and GWP of some refrigerants used for industrial refrigeration are as follows:

ASHRAE number	Substance	ODP	GWP
R-22	Chlorodifluoromethane	0.05	1810
R-404a	HFC (44±2 % C <sub>2</sub> HF <sub>5</sub> , 52±1 % C <sub>2</sub> H <sub>3</sub> F <sub>3</sub> , 4±2 % C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> )	0	3922
R-407c	HFC (23±2 % CH <sub>2</sub> F <sub>2</sub> , 25±2 % C <sub>2</sub> HF <sub>5</sub> , 52±2 % C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> )	0	1774
R-422a	HFC (85.1±1 % C <sub>2</sub> HF <sub>5</sub> , 11.5±1 % C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> , 3.4+1,-.4 % C <sub>4</sub> H <sub>10</sub> )	0	3143
R-717	Ammonia	0	0
R-718	Water/Steam	0	0.2 ± 0.2
R-744	Carbon dioxide	0	1

NB: ASHRAE = American Society of Heating, Refrigerating and Air-Conditioning Engineers.

Source: Wikipedia ([https://en.wikipedia.org/wiki/List\\_of\\_refrigerants](https://en.wikipedia.org/wiki/List_of_refrigerants)); Cardoso et al.: Refrigerants used in the Portuguese food industry: Current status. International Journal of Refrigeration, 83 (2017) 60–74.

- Refrigerant emissions from cooling systems are fugitive. According to the 'Preparatory study for a review of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases', the leakage rate for industrial HFC refrigeration systems was estimated at around 8 %, compared to > 20 % for HCFC-containing equipment. The availability of fugitive emission data may be limited. However, data on refrigerant consumption may be available and are directly connected to the leakage rate. This approach was recently used in the FDM BREF review to set a BAT-AEL for hexane emissions from oilseed processing based on hexane consumption (i.e. by applying a mass balance approach).

#### EIPPCB proposal

- To change the original EIPPCB proposal as follows:
  - To collect information on the use of refrigerants without ozone depletion potential and with low global warming potential.
  - To include HFC and HCFC as KEIs for slaughterhouses and animal by-product installations.
  - To collect information on the consumption of refrigerants and techniques to prevent or reduce leakages in slaughterhouses and animal by-product installations through the questionnaires.

2.2.3.1.2 Slaughterhouses

2.2.3.1.2.1 Dust

<b>Original EIPPCB proposal</b>			
To include dust as a KEI together with the main sources:			
<b>KEI</b>	<b>IED activity</b>	<b>Type of installation</b>	<b>Process</b>
Dust	Slaughterhouses	All animals	Animal reception and lairage
		Pigs	Singeing
<b>Summary of IPs</b>			
<b><u>Animal reception and lairage (all animals)</u></b>			
<ul style="list-style-type: none"> <li>• 5 out of 24 IPs agree with the proposal, 4 partly agree, 8 disagree and 7 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Dust may be an issue for poultry reception and lairage (BE, UK).</li> <li>- Dust may be a problem if sawdust containers are not covered from the wind. No dust emissions are expected from unloading animals or lairage (DK).</li> <li>- Lairage is open to air and animals remain in this area for very few hours (FR).</li> <li>- Measurement of dust emissions from poultry slaughterhouses is relevant. Dust emission measurements only for animal reception and lairage are probably not possible (DE).</li> <li>- Dust is not a KEI for lairage as lairage areas are usually cleaned on a daily basis (FR, IE, CLITRAVI, UECBV).</li> <li>- Dust is not a KEI; it is related to staff health and safety (AVEC, ORGALIME).</li> </ul> </li> </ul>			
<b><u>Pig singeing</u></b>			
<ul style="list-style-type: none"> <li>• 4 out of 24 IPs agree with the proposal, 1 partly agrees, 8 disagree and 11 do not provide answers.</li> <li>• The main comments of the IPs that disagree are as follows: <ul style="list-style-type: none"> <li>- Industrially bred pigs have very little hair, which is mostly removed through scalding and de-hairing (DK).</li> <li>- Dust from singeing will be suspended in the water phase, and thereby included in the parameter TSS used to measure emissions to water (IE, ES, CLITRAVI, UECBV).</li> <li>- No data to support dust as a KEI from this source (UK).</li> <li>- Singeing is performed in a dedicated closed area. Dust is not emitted (FR).</li> </ul> </li> </ul>			
<b>EIPPCB assessment</b>			
<b><u>Animal reception and lairage (all animals)</u></b>			
<ul style="list-style-type: none"> <li>• The majority of IPs do not support the EIPPCB proposal.</li> <li>• The availability of data may be limited, according to the IPs.</li> <li>• Diffuse dust emissions can arise from poultry reception and lairage; the cleaning of the lairage area seems a common technique to reduce the generation of dust emissions.</li> <li>• Most poultry animals are only retained for a few hours in the lairage area before slaughtering.</li> </ul>			
<b><u>Pig singeing</u></b>			
<ul style="list-style-type: none"> <li>• The majority of IPs do not support the EIPPCB proposal.</li> <li>• The availability of data may be limited, according to the IPs.</li> </ul>			
<b>EIPPCB proposal</b>			
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: not to include dust as a KEI for slaughterhouses.</li> </ul>			

## 2.2.3.1.2.2

 NH<sub>3</sub>

<b>Original EIPPCB proposal</b>			
To include NH <sub>3</sub> as a KEI together with the main sources:			
<b>KEI</b>	<b>IED activity</b>	<b>Type of installation</b>	<b>Process</b>
NH <sub>3</sub>	Slaughterhouses	All animals	Animal reception and lairage
<b>Summary of IPs</b>			
<ul style="list-style-type: none"> <li>• 5 out of 24 IPs agree with the proposal, 5 partly agree, 7 disagree and 7 do not provide answers.</li> <li>• The main comments of the IPs are as follows:                             <ul style="list-style-type: none"> <li>- Due to the cessation of the feeding of the animals prior to slaughter, excrements are reduced (DE, AVEC).</li> <li>- NH<sub>3</sub> is covered by the odour parameter (ES, UK).</li> <li>- Emissions are difficult to monitor as they are not channelled (IE).</li> <li>- NH<sub>3</sub> remains inside the building and is not emitted to the environment (ORGALIME).</li> <li>- NH<sub>3</sub> originates from manure and is not a KEI as lairage areas are usually cleaned and disinfected on a daily basis (FR, CLITRAVI, UECBV).</li> </ul> </li> </ul>			
<b>EIPPCB assessment</b>			
<ul style="list-style-type: none"> <li>• The availability of data is limited, according to the IPs.</li> <li>• Emissions of NH<sub>3</sub> are related to the excretion of manure which seems to be limited due to the:                             <ul style="list-style-type: none"> <li>- reduced time that most animals are retained in the lairage area before slaughter;</li> <li>- termination of the feeding of the animals sufficiently in advance of slaughtering.</li> </ul> </li> </ul>			
<b>EIPPCB proposal</b>			
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: not to include NH<sub>3</sub> as a KEI for slaughterhouses.</li> </ul>			

## 2.2.3.1.3 Animal by-product installations

## 2.2.3.1.3.1

## Dust

<b>Original EIPPCB proposal</b>			
To include dust as a KEI together with the main sources:			
<b>KEI</b>	<b>IED activity</b>	<b>Type of installation</b>	<b>Process</b>
Dust	Animal by-products installations	Rendering	Rendering process
		Fishmeal and fish oil production	Drying
		Blood processing/Production of plasma	Drying of plasma
		Incineration of animal by-products	Incineration
<b>Summary of IPs</b>			
<b>Rendering</b>			
<ul style="list-style-type: none"> <li>• 9 out of 24 IPs agree with the proposal, 1 partly agrees, 4 disagree and 10 do not provide answers.</li> <li>• The main comments of the IPs are as follows:</li> </ul>			

- Include dust from the storage of animal meal (BE).
- Permits often do not require dust monitoring (EFPRA).
- Dust is only monitored in the case of using thermal oxidation as an abatement technique (FR).
- Dust emissions may be relevant for certain processes such as grinding (IT).
- Activities such as milling/grinding will result in dust being generated, but this dust is normally not emitted to the environment (UK).

**Fishmeal and fish oil production**

- 6 out of 24 IPs agree with the proposal, 1 partly agrees, 4 disagree and 13 do not provide answers.
- The main comments of the IPs are as follows:
  - Permits often do not require dust monitoring (EFPRA).
  - Dust is only monitored in the case of using thermal oxidation as an abatement technique (FR).
  - There will likely be limited data as most waste gases are scrubbed and incinerated. Data should be sought to ensure the effectiveness of the abatement (UK).
  - The drying process takes place in a closed system (NO, EUfishmeal).

**Blood processing/Production of plasma**

- 3 out of 24 IPs agree with the proposal, 3 partly agree, 3 disagree and 15 do not provide answers.
- The main comments of the IPs are as follows:
  - Permits often do not require dust monitoring (EFPRA).
  - There will likely be limited data (UK, EFPRA).

**Incineration of animal by-products**

- 8 out of 24 IPs agree with the proposal, 1 partly agrees and 15 do not provide answers.
- The main comments of the IPs are as follows:
  - Dust is routinely monitored in incineration plants (BE, DE, EFPRA).

**EIPPCB assessment**

- The majority of IPs support the EIPPCB proposal.
- Waste gas streams from different sources in ABP installations are often collected and emitted through a common stack. Therefore, it does not seem to make sense to differentiate between different emission sources. At a later stage, major and minor sources could be differentiated based on the reported emission rates.
- Waste gases from the related processes are commonly treated with end-of-pipe techniques. Data on dust emissions may be available for these channelled sources.
- The drying process is a relevant source of dust emissions. Drying is also used in gelatine manufacturing.
- The current SA BREF addresses dust emissions from incineration.

**EIPPCB proposal**

- To change the original EIPPCB proposal as follows: to include channelled dust emissions as a KEI for ABP installations.



<b>Original EIPPCB proposal</b>			
To include NH <sub>3</sub> as a KEI together with the main sources:			
<b>KEI</b>	<b>IED activity</b>	<b>Type of installation</b>	<b>Process</b>
NH <sub>3</sub>	Animal by-products installations	Rendering	Rendering process
		Incineration of animal by-products	Incineration
<b>Summary of IPs</b>			
<b><u>Rendering</u></b>			
<ul style="list-style-type: none"> <li>8 out of 24 IPs agree with the proposal, 3 partly agree, 2 disagree and 11 do not provide answers.</li> <li>The main comments of the IPs are as follows:                             <ul style="list-style-type: none"> <li>NH<sub>3</sub> can be used as an alternative parameter to odour (BE).</li> <li>NH<sub>3</sub> is covered by the odour parameter (DE, ES, NO).</li> <li>NH<sub>3</sub> is monitored at the outlet of end-of-pipe techniques (biofilter, thermal oxidation) (DK, FR, IT).</li> <li>Permits rarely specify monitoring of ammonia from point sources. NH<sub>3</sub> is a reliable parameter to address odour (EFPRA).</li> </ul> </li> </ul>			
<b><u>Incineration of animal by-products</u></b>			
<ul style="list-style-type: none"> <li>4 out of 24 IPs agree with the proposal, 2 partly agree, 2 disagree and 16 do not provide answers.</li> <li>The main comments of the IPs are as follows:                             <ul style="list-style-type: none"> <li>NH<sub>3</sub> can be used as an alternative parameter to odour (BE).</li> <li>NH<sub>3</sub> is typically used as a control parameter to avoid overdosing urea in selective non-catalytic reduction (SNCR) or selective catalytic reduction (SCR) (DE).</li> <li>NH<sub>3</sub> is covered by the odour parameter (ES, NO).</li> <li>There will likely be limited data (UK).</li> <li>Permits usually do not contain ELVs (EFPRA).</li> </ul> </li> </ul>			
<b>EIPPCB assessment</b>			
<ul style="list-style-type: none"> <li>The majority of IPs support the EIPPCB proposal.</li> <li>NH<sub>3</sub> is one of the compounds contributing to odour.</li> <li>According to the IPs, NH<sub>3</sub> emissions from rendering are monitored in 6 MS, so there may be data available.</li> <li>According to the IPs, NH<sub>3</sub> emissions from incineration are monitored in 2 MS and the current SA BREF contains a BAT-AEL, so there may be data available.</li> <li>Waste gases from enclosed rendering processes and from incineration are commonly treated with end-of-pipe techniques.</li> <li>The combustion of MBM and fats is proposed to be excluded from the scope, while the incineration of carcasses is proposed to be included in the scope (see Section 2.1.2.4).</li> </ul>			
<b>EIPPCB proposal</b>			
<ul style="list-style-type: none"> <li>To change the original EIPPCB proposal as follows: to include channelled NH<sub>3</sub> emissions as a KEI for rendering and for the incineration of carcasses.</li> </ul>			

<b>Original EIPPCB proposal</b>			
To include TVOC as a KEI together with the main sources:			
<b>KEI</b>	<b>IED activity</b>	<b>Type of installation</b>	<b>Process</b>
TVOC	Animal by-products installations	Rendering	Rendering process
		Incineration of animal by-products	Incineration
<b>Summary of IPs</b>			
<b><u>Rendering</u></b>			
<ul style="list-style-type: none"> <li>• 8 out of 24 IPs agree with the proposal, 2 partly agree, 2 disagree and 12 do not provide answers.</li> <li>• The main comments of the IPs are as follows:                             <ul style="list-style-type: none"> <li>- TVOC is a relevant parameter for emissions from the treatment of odorous waste gases with a biofilter (DK) or a thermal oxidiser (DK, FR).</li> <li>- TVOC may be used as an odour indicator (UK).</li> <li>- TVOC may be covered by the odour parameter (NO).</li> <li>- Odorous compounds in waste gases may include VOCs (DE, EFPR) but permits rarely specify monitoring of VOCs from point sources (EFPR).</li> </ul> </li> </ul>			
<b><u>Incineration of animal by-products</u></b>			
<ul style="list-style-type: none"> <li>• 5 out of 24 IPs agree with the proposal, 2 partly agree, 2 disagree and 15 do not provide answers.</li> <li>• The main comments of the IPs are as follows:                             <ul style="list-style-type: none"> <li>- TVOC is a relevant parameter to monitor that oxidation is complete (DE).</li> <li>- TVOC may be used as an odour indicator (UK).</li> <li>- TVOC may be covered by the odour parameter (NO).</li> <li>- Permits usually do not contain ELVs. Organic compounds will be destroyed during incineration due to the high temperatures (EFPR).</li> </ul> </li> </ul>			
<b>EIPPCB assessment</b>			
<ul style="list-style-type: none"> <li>• The majority of IPs support the EIPPCB proposal.</li> <li>• According to the IPs, TVOC from rendering is monitored in 3 MS, so there may be data available.</li> <li>• According to the IPs, TVOC from incineration is monitored in 3 MS and the current SA BREF contains a BAT-AEL, so there may be data available.</li> <li>• Waste gases from enclosed rendering processes and from incineration are commonly treated with end-of-pipe techniques.</li> <li>• The combustion of MBM and fats is proposed to be excluded from the scope, while the incineration of carcasses is proposed to be included in the scope (see Section 2.1.2.4).</li> </ul>			
<b>EIPPCB proposal</b>			
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: to include channelled TVOC emissions as a KEI for rendering and for the incineration of carcasses.</li> </ul>			

<p><b>Original EIPPCB proposal</b></p> <ul style="list-style-type: none"> <li>To include in the questionnaires CO emissions from rendering installations not as a KEI but as contextual information on the combustion efficiency of thermal oxidisers.</li> <li>To include in the questionnaires CO emissions from incineration of animal by-products installations not as a KEI but as contextual information on the combustion efficiency.</li> </ul>
<p><b>Summary of IPs</b></p>
<p><b>Rendering</b></p> <ul style="list-style-type: none"> <li>8 out of 24 IPs agree with the proposal, 5 disagree and 11 do not provide answers.</li> <li>The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>CO is a KEI relevant for emissions from boilers where animal by-products are used as fuel (AT, ES, IT, EFPRA).</li> <li>CO is a key process control parameter for combustion efficiency (DE, DK, UK, EFPRA).</li> <li>CO can be monitored in the case of using thermal oxidation as an abatement technique (FR, IT, EFPRA).</li> </ul> </li> </ul>
<p><b>Incineration of animal by-products</b></p> <ul style="list-style-type: none"> <li>7 out of 24 IPs agree with the proposal, 2 disagree and 15 do not provide answers.</li> <li>The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>CO is a key process control parameter for combustion efficiency (DE, UK, EFPRA).</li> <li>CO emissions are relevant for fat incineration (ES).</li> </ul> </li> </ul>
<p><b>EIPPCB assessment</b></p> <ul style="list-style-type: none"> <li>The majority of IPs support the EIPPCB proposal.</li> <li>CO is relevant for combustion processes and is normally used to control the combustion efficiency.</li> <li>No BAT-AELs have been set in recent BAT conclusions, only indicative levels for CO emissions to air.</li> <li>The combustion of MBM and fats is proposed to be excluded from the scope (see Section 2.1.2.4).</li> <li>According to the IPs, CO from rendering is monitored in 6 MS, so there may be data available.</li> <li>The current SA BREF contains a BAT-AEL for CO emissions from the combustion/incineration of ABP, so there may be data available.</li> <li>The combustion of MBM and fats is proposed to be excluded from the scope, while the incineration of carcasses is proposed to be included in the scope (see Section 2.1.2.4).</li> </ul>
<p><b>EIPPCB proposal</b></p> <ul style="list-style-type: none"> <li>To keep the original EIPPCB proposal unchanged: <ul style="list-style-type: none"> <li>To include in the questionnaires CO emissions from rendering installations not as a KEI but as contextual information on the combustion efficiency of thermal oxidisers.</li> <li>To include in the questionnaires CO emissions from the incineration of carcasses not as a KEI but as contextual information on the combustion efficiency.</li> </ul> </li> </ul>

2.2.3.1.3.5 Other parameters

<p><b>Original EIPPCB proposals</b></p> <p>To include the following parameters as a KEI for the incineration of animal by-products:</p> <ul style="list-style-type: none"> <li>• HCl;</li> <li>• HF;</li> <li>• Dioxins and furans;</li> <li>• Cd+Tl;</li> <li>• Hg;</li> <li>• Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V.</li> </ul>
<p><b>Summary of IPs</b></p> <ul style="list-style-type: none"> <li>• HCl: 7 out of 24 IPs agree with the proposal, 1 partly agrees, 1 disagrees and 15 do not provide answers.</li> <li>• HF: 6 out of 24 IPs agree with the proposal, 1 partly agrees, 2 disagree and 16 do not provide answers.</li> <li>• Dioxins and furans: 7 out of 24 IPs agree with the proposal, 1 partly agrees, 1 disagrees and 15 do not provide answers.</li> <li>• Cd+Tl: 6 out of 24 IPs agree with the proposal, 1 partly agrees, 2 disagree and 15 do not provide answers.</li> <li>• Hg: 6 out of 24 IPs agree with the proposal, 1 partly agrees, 2 disagree and 15 do not provide answers.</li> <li>• Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V: 6 out of 24 IPs agree with the proposal, 1 partly agrees, 2 disagree and 15 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Permits specify this parameter for routine monitoring (DE, EFPRA).</li> <li>- Materials that are incinerated do not contain fluorine species and the listed metals (EFPRA).</li> <li>- These pollutants are only relevant for stack emissions from the thermal treatment of odorous waste gas streams (DK).</li> <li>- Emissions of these pollutants from fat incineration are very low (ES).</li> </ul> </li> </ul>
<p><b>EIPPCB assessment</b></p> <p><b>General</b></p> <ul style="list-style-type: none"> <li>• The majority of the IPs support the EIPPCB proposal.</li> <li>• The combustion of MBM and fats is proposed to be excluded from the scope, while the incineration of carcasses is proposed to be included in the scope (see Section 2.1.2.4).</li> <li>• Waste gases from incineration are commonly treated with end-of-pipe techniques. The pollutants listed may be emitted from the outlet of these waste gas treatment techniques.</li> </ul> <p><b>HCl</b></p> <ul style="list-style-type: none"> <li>• According to the IPs, HCl is monitored in 4 MS and the current SA BREF contains a BAT-AEL for HCl emissions, so there may be data available.</li> <li>• Animal carcasses contain chloride and their incineration may lead to HCl emissions to air.</li> </ul> <p><b>HF</b></p> <ul style="list-style-type: none"> <li>• According to the IPs, HF is monitored in 4 MS, so there may be data available.</li> </ul> <p><b>Dioxins and furans</b></p> <ul style="list-style-type: none"> <li>• According to the IPs, dioxins and furans are monitored in 4 MS and the current SA BREF contains a BAT-AEL, so there may be data available.</li> <li>• Animal carcasses contain chloride and their incineration could lead to dioxin and furan emissions to air (through <i>de novo</i> synthesis).</li> </ul> <p><b>Cd+Tl, Hg and Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V</b></p> <ul style="list-style-type: none"> <li>• Table 3.47 of the current SA BREF gives evidence of the metal content of animal fats.</li> </ul>

<ul style="list-style-type: none"> <li>• According to the IPs, metals and metalloids are monitored in 4 MS and the current SA BREF contains BAT-AELs for them, so there may be data available.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: to include channelled emissions of HCl, HF, dioxins and furans, Cd+Tl, Hg, and Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V as a KEI for the incineration of carcasses.</li> </ul>

**2.2.3.2 Other proposals from TWG members**

<b>Original EIPPCB request</b>
Request 7: TWG members are asked to provide initial positions on additional candidate KEIs for emissions to air, if any, accompanied by a rationale addressing the criteria mentioned in Section 3.1 of the call for IPs. Information on emission limit values set in permits and monitoring (e.g. standards used) of these additional candidate KEIs is also expected.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• Include noise as a KEI for the whole process in all slaughterhouses and ABP installations (DE).</li> <li>• Include noise as a KEI in rendering, fishmeal and fish oil production installations (UK).</li> <li>• Include tin (Sn) as an additional KEI in heavy metals for incineration of animal by-products (BE).</li> <li>• Include TOC from the rendering process (IE).</li> <li>• Include NO<sub>x</sub> as a KEI for combustion of odorous gases in boilers (IE).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The impact of noise emissions depends on a number of factors including the distance to the receiver, the local meteorological conditions, the type of source, the noise intensity and frequency and the individual perception.</li> <li>• Information on noise emissions and preventive and abatement techniques is commonly included in many BREFs. The current SA BREF also includes such information.</li> <li>• The sources for Sn emissions to air from the incineration of ABP are unclear. The availability of Sn data from the incineration of ABP is limited.</li> <li>• TVOC from channelled sources has been proposed as a KEI for rendering installations.</li> <li>• The interface of the SA BREF with the LCP BREF and MCP Directive is addressed in Section 2.1.2.2.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• Not to include noise as a KEI for slaughterhouses and ABP installations.</li> <li>• Not to include Sn as a KEI for the incineration of carcasses.</li> </ul>

## 2.2.4 Energy consumption and efficiency

### 2.2.4.1 Installation level

<b>Original EIPPCB proposal</b>
<p>Proposal 8: The EIPPCB proposes to include energy consumption as a KEI for slaughterhouses.</p> <p>Proposal 9: The EIPPCB proposes to include energy consumption as a KEI for animal by-products installations.</p>
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 18 out of 24 IPs agree with the EIPPCB proposal for slaughterhouses, 1 disagrees and 5 do not provide answers.</li> <li>• 16 out of 24 IPs agree with the EIPPCB proposal for ABP installations, 2 disagree and 6 do not provide answers.</li> <li>• The main comments of the IPs are as follows:             <ul style="list-style-type: none"> <li>- Focus on BAT to reduce energy consumption. Energy data are mostly considered confidential, system boundaries are often unclear and the usefulness of the gathered data is doubtful (DE).</li> <li>- The consumption of each dedicated process is not commonly monitored. The data collection should be BAT-oriented and avoid setting indicative BAT-AEPLs as was done during the FDM BREF review (FR).</li> <li>- It is appropriate to gather information about the techniques applied to reduce energy consumption and the related reduction achieved (IT).</li> <li>- Caution should be taken when interpreting energy consumption data, as they depend on the type and configuration of the installation (AVEC).</li> <li>- Energy consumption should include all fuels used at the installations (UK, UECBV).</li> <li>- Consumption data differ widely for the different animals (SE).</li> <li>- Specific energy consumption is the proper indicator (BE).</li> <li>- There are only limited options to reduce energy consumption on a technical basis (CEFIC).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly agrees with the EIPPCB proposal.</li> <li>• According to the current SA BREF, energy consumption is relevant for SA installations.</li> <li>• A categorisation according to products, processes and/or fuels could be used for the differentiation of the installations.</li> <li>• Additionally, data on energy consumption is proposed to be collected for specific processes for which energy consumption is significant and consumption data can be obtained (see Section 2.2.4.2 and Section 2.2.4.1).</li> <li>• Information on techniques applied to reduce energy consumption can be part of the data collection as contextual information.</li> <li>• The derivation of BAT-AEPLs for energy consumption may be hampered by the confidentiality of the data (see Section 2.3.4) and the difficulty in clearly defining the system boundaries.</li> <li>• Data for specific energy consumption is proposed to be collected for the review of the SA BREF (see Section 2.3.1.3).</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows:             <ul style="list-style-type: none"> <li>- To include energy consumption at installation level as a KEI for SA installations.</li> <li>- The TWG to identify the contextual information (e.g. plant configuration, type of processes, raw materials, product specifications, system boundaries) needed to understand and compare the data collected.</li> <li>- 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 energy consumption should be derived.</li> </ul> </li> </ul>

## 2.2.4.2 Specific processes

### 2.2.4.2.1 Slaughterhouses

<p><b>Original EIPPCB proposal</b></p> <p>To include energy consumption as a KEI in slaughterhouses for the following specific processes: cooling systems (electricity), boilers (heat), scalding (heat), pig singeing (heat) and chilling of carcasses (electricity).</p>
<p><b>Summary of IPs</b></p> <p><b>General</b></p> <ul style="list-style-type: none"> <li>• Focus only on total energy consumption as a KEI (FI, FR, CLITRAVI, UECBV).</li> <li>• It is appropriate to gather information about the techniques applied to reduce energy consumption (IT).</li> <li>• There is no relation between techniques used and consumption. Consumption depends on raw materials, plant configuration, and product mix. Integrated processes are optimised as a whole (CEFIC).</li> </ul> <p><b>Cooling systems (electricity)</b></p> <ul style="list-style-type: none"> <li>• 10 out of 24 IPs agree with the EIPPCB proposal, 5 partly agree, 3 disagree and 6 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Cooling systems are major consumers of electricity in slaughterhouses (DE).</li> <li>- The energy consumption of cooling systems with CO<sub>2</sub> or NH<sub>3</sub> is significant. The ICS BREF covers systems that are water- or air-cooled (DK).</li> <li>- The data analysis of cooling systems should take the following into account: climatic conditions, presence of meat processing, product requirements (ES, CLITRAVI, UECBV).</li> <li>- A very limited number of slaughterhouses are monitoring the energy consumption of cooling systems (IE, AVEC, ORGALIME).</li> </ul> </li> </ul> <p><b>Boilers (heat)</b></p> <ul style="list-style-type: none"> <li>• 9 out of 24 IPs agree with the EIPPCB proposal, 3 disagree, 4 partly agree and 8 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Auxiliary steam makes up a small percentage of the overall energy used but can still be significant (DE).</li> <li>- A very limited number of slaughterhouses are monitoring the energy consumption of boilers (IE, AVEC).</li> <li>- Only boilers covered by the scope of the SA BREF should be considered (DK).</li> </ul> </li> </ul> <p><b>Scalding (heat)</b></p> <ul style="list-style-type: none"> <li>• 10 out of 24 IPs agree with the EIPPCB proposal, 4 partly agree, 4 disagree and 6 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Scalding is the largest heat-consuming process in slaughterhouses (DE).</li> <li>- A very limited number of slaughterhouses are monitoring the energy consumption of scalding (DK, IE, AVEC, ORGALIME).</li> <li>- Scalding is only relevant for pig and poultry slaughterhouses (UK, CLITRAVI, UECBV).</li> </ul> </li> </ul> <p><b>Pig singeing (heat)</b></p> <ul style="list-style-type: none"> <li>• 9 out of 24 IPs agree with the EIPPCB proposal, 3 partly agree, 3 disagree and 9 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Singeing is a significant heat-consuming process in pig slaughterhouses (DE).</li> <li>- Data might not be available at process level (DK, IE, CLITRAVI, UECBV).</li> </ul> </li> </ul> <p><b>Chilling of carcasses (electricity)</b></p>

- 9 out of 24 IPs agree with the EIPPCB proposal, 5 partly agree, 3 disagree and 7 do not provide answers.
- The main comments of the IPs are as follows:
  - This is a significant energy-consuming process (DE).
  - Data might not be available at process level (DK, AVEC, CLITRAVI, ORGALIME, UECBV).
  - The energy consumption for chilling of carcasses should be included under the energy consumption for cooling systems (FI).

#### **EIPPCB assessment**

##### **General**

- Energy consumption is proposed as a KEI at installation level (see Section 2.2.4.1). By also collecting data at process level, the connection between reported consumption levels and the techniques used can be better understood.
- A categorisation according to products, processes and/or fuels could be used for the differentiation of the installations.

##### **Cooling systems (electricity)**

- The majority of IPs support the EIPPCB proposal.
- Cooling systems refer to all systems to remove heat from any medium, using heat exchange with any refrigerant, water and/or air to bring down the temperature of that medium. This definition would include systems used for chilling or freezing.
- Cooling systems are commonly used in slaughterhouses and are major electricity consumers according to the current SA BREF.

##### **Boilers (heat)**

- The majority of IPs support the EIPPCB proposal.
- Hot water and steam are commonly used in slaughterhouses.
- On-site combustion plants generating steam are proposed to be excluded from the scope of the SA BREF (see Section 2.1.2.2).

##### **Scalding (heat)**

- The majority of IPs support the EIPPCB proposal.
- Scalding tanks contain hot water. Scalding is more relevant for the slaughtering of pigs and poultry.

##### **Pig singeing (heat)**

- The majority of IPs support the EIPPCB proposal.
- A pig singeing unit usually includes a number of burners and can be regarded as a significant heat consumer in a pig slaughterhouse.

##### **Chilling of carcasses (electricity)**

- The majority of IPs support the EIPPCB proposal.
- Chilling or freezing of carcasses is included as a specific type of cooling.

#### **EIPPCB proposal**

- 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).
- The TWG to identify the contextual information (e.g. different animals, fuels used, overlaps with FDM processes) 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 energy consumption should be derived.



## 2.2.4.2.2 Animal by-product installations

<b>Original EIPPCB proposal</b>
To include energy consumption as a KEI in ABP installations for the following specific processes: cooling systems (electricity), boilers (heat) and drying (heat).
<b>Summary of IPs</b>
<p><b>General</b></p> <ul style="list-style-type: none"> <li>• Focus only on total energy consumption as a KEI (FI, FR).</li> <li>• It is appropriate to gather information about the techniques applied to reduce energy consumption (IT).</li> <li>• There is no relation between techniques used and consumption. Consumption depends on raw materials, plant configuration, and product mix. Integrated processes are optimised as a whole (CEFIC).</li> </ul> <p><b>Cooling systems (electricity)</b></p> <ul style="list-style-type: none"> <li>• 10 out of 24 IPs agree with the EIPPCB proposal, 2 partly agree, 4 disagree and 8 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Cooling is not relevant for ABP installations (DE, EFPRA).</li> <li>- The energy consumption of cooling systems with CO<sub>2</sub> or NH<sub>3</sub> is significant. The ICS BREF covers systems that are water- or air-cooled (DK).</li> <li>- Cooling is relevant for fishmeal and fish oil installations (DK, EU fishmeal).</li> <li>- The data analysis of cooling systems should take the climatic conditions into account (ES).</li> <li>- A very limited number of ABP installations are monitoring the energy consumption of cooling systems (IE, AVEC, ORGALIME).</li> </ul> </li> </ul> <p><b>Boilers (heat)</b></p> <ul style="list-style-type: none"> <li>• 11 out of 24 IPs agree with the EIPPCB proposal, 2 disagree, 3 partly agree and 8 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- A very limited number of ABP installations are monitoring the energy consumption of boilers (IE, AVEC).</li> <li>- A plant could have a very efficient boiler, but still be inefficient due to energy losses (e.g. through pipes) (EUfishmeal).</li> <li>- Only boilers covered by the scope of the SA BREF should be considered (DK).</li> </ul> </li> </ul> <p><b>Drying (heat) in rendering, fishmeal and fish oil production, blood processing and gelatine manufacturing installations</b></p> <ul style="list-style-type: none"> <li>• 11 out of 24 IPs agree with the EIPPCB proposal, 2 partly agree, 3 disagree and 8 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- This is the main consumer of energy. Most sites use steam, but a small number use direct gas heating or electricity (DE, UK, EFPRA).</li> <li>- Data might not be available at process level (DK, IE, NO, EUfishmeal).</li> <li>- The energy consumption of drying is a KEI only if the drying energy is not supplied by steam (EFPRA).</li> <li>- Specific energy consumption is the proper indicator (BE).</li> </ul> </li> </ul> <p><b>Additional processes</b></p> <ul style="list-style-type: none"> <li>• Air extraction and waste gas treatment: <ul style="list-style-type: none"> <li>- Air extraction systems consume electricity (DE, UK, EFPRA).</li> <li>- Thermal oxidation of odorous waste gases is a large consumer of fuel (DE, UK, EFPRA).</li> <li>- Biofilters and scrubbers consume electricity (DE).</li> </ul> </li> <li>• WWTPs consume electricity (DE, EFPRA).</li> </ul>

**EIPPCB assessment**

**General**

- Energy consumption is proposed as a KEI at installation level (see Section 2.2.4.1). By also collecting data at process level, the connection between reported consumption levels and the techniques used can be better understood.
- A categorisation according to products, processes and/or fuels could be used for the differentiation of the installations.

**Cooling systems (electricity)**

- Cooling systems are not widely used in ABP installations.

**Boilers (heat)**

- Hot water and steam are commonly used in ABP installations.
- On-site combustion plants generating steam are proposed to be excluded from the scope of the SA BREF (see Section 2.1.2.2).

**Drying (heat) in rendering, fishmeal and fish oil production, blood processing and gelatine manufacturing installations**

- The IPs broadly agree with the EIPPCB proposal.
- Drying is commonly an energy-intensive process. Steam, electricity or direct contact heating with gas can be used.
- Data for specific energy consumption are proposed to be collected for the review of the SA BREF (see Section 2.3.1.3).

**Additional processes**

- Waste gas treatment (especially thermal oxidation systems) can consume significant amounts of energy.

**EIPPCB proposal**

- To include energy consumption as a KEI in ABP installations for the following specific processes:
  - drying (in rendering, fishmeal and fish oil production, blood processing and gelatine manufacturing installations);
  - waste gas treatment.
- The TWG to identify the contextual information (e.g. different raw materials processed, fuels used) 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 energy consumption should be derived.

## 2.2.4.2.3 Incineration of ABP

<b>Original EIPPCB proposal</b>
Proposal 10: The EIPPCB proposes to include energy efficiency (electricity, heat) and boiler efficiency as a KEI for installations incinerating animal by-products.
<b>Summary of IPs</b>
<p><b><u>Energy efficiency</u></b></p> <ul style="list-style-type: none"> <li>• 11 out of 24 IPs agree with the EIPPCB proposal, 3 disagree and 10 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- The benefit of this parameter for setting permit conditions is unclear (DE).</li> <li>- The electricity/heat generated per unit may be a useful indicator (EFPRA).</li> <li>- The energy efficiency depends on the quality of the ABP that are incinerated (CLITRAVI, UECEBV).</li> <li>- Specific energy consumption is the proper indicator (BE).</li> </ul> </li> </ul> <p><b><u>Boiler efficiency</u></b></p> <ul style="list-style-type: none"> <li>• 9 out of 24 IPs agree with the EIPPCB proposal, 1 partly agrees, 2 disagree and 12 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- The benefit of this parameter for setting permit conditions is unclear (DE).</li> <li>- Clarify if combustion plants used for the treatment of odorous waste gases are included (BE).</li> <li>- Take into account the efficiency of the whole system, not only of the boiler (NL).</li> <li>- Boiler efficiency is a part of the more general energy efficiency and controlled by mandatory boiler maintenance (EFPRA).</li> <li>- When a combustion plant is used for the treatment of odorous waste gases, the boiler efficiency is a bit lower (due to e.g. higher temperatures, higher residence time of the flue-gases) (UK, EFPRA).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The IPs broadly agree with the EIPPCB proposal.</li> <li>• The combustion of MBM and fats is proposed to be excluded from the scope, while the incineration of carcasses is proposed to be included in the scope (see Section 2.1.2.4).</li> <li>• The energy consumption in ABP installations for waste gas treatment is proposed to be included as a KEI (see Section ).</li> <li>• The TWG for the review of the WI BREF decided to set BAT-AEPLs for energy efficiency expressed as: <ul style="list-style-type: none"> <li>- gross electrical efficiency or gross energy efficiency: for the incineration of non-hazardous waste other than sewage sludge and of hazardous wood waste;</li> <li>- boiler efficiency: for the incineration of sewage sludge and of hazardous waste other than hazardous wood waste.</li> </ul> </li> <li>• The final draft of the WI BREF stipulates that plants incinerating predominantly hazardous waste or sewage sludge may face challenges in optimising the use of the energy recovered, due to their size (usually, especially for hazardous waste incinerators, smaller than waste-to-energy plants), their location (usually closer to where the waste is generated and possibly further from potential users of the recovered energy), and their design (more oriented towards waste destruction than to the exploitation of the waste energy content). Therefore, the efficiency in converting the energy content of the waste into steam or hot water (or boiler efficiency) may be used as a more widely comparable parameter to determine the energy efficiency performance.</li> <li>• Data for specific energy consumption are proposed to be collected for the review of the SA BREF (see Section 2.3.1.3).</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: <ul style="list-style-type: none"> <li>- To include energy efficiency as a KEI for installations incinerating carcasses.</li> </ul> </li> </ul>

- The TWG to identify the contextual information (e.g. different animal carcasses, fuels used) 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 energy efficiency should be derived and how they should be expressed (e.g. as boiler efficiency).

## 2.2.5 Water consumption and amount of waste water discharged

### 2.2.5.1 Installation level

<b>Original EIPPCB proposal</b>
<p>Proposal 11: The EIPPCB proposes to include water consumption and the amount of waste water discharged as KEIs for slaughterhouses.</p> <p>Proposal 12: The EIPPCB proposes to include water consumption and the amount of waste water discharged as KEIs for animal by-products installations.</p>
<b>Summary of IPs</b>
<p><b><u>Water consumption</u></b></p> <ul style="list-style-type: none"> <li>• 18 out of 24 IPs agree with the EIPPCB proposal for slaughterhouses, 1 partly agrees and 5 do not provide answers.</li> <li>• 13 out of 24 IPs agree with the EIPPCB proposal for ABP installations, 2 partly agree, 3 disagree and 6 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Water consumption and reuse may be affected by hygiene requirements (FR).</li> <li>- It is appropriate to gather information about the techniques applied to reduce water consumption and the related reduction achieved (IT).</li> <li>- There are a number of variables which will affect water consumption including throughput, degree of co-product processing, processing floor area and animal type (SE, UK, AVEC, UECBV).</li> <li>- Water consumption is a KEI at installation level (IE, CLITRAVI, UECBV).</li> <li>- If water consumption data are considered confidential by TWG members, it will be difficult to derive reliable BAT-AEPLs (DE).</li> <li>- Specific water consumption is the proper indicator (BE, IT).</li> <li>- ABP processes typically use a lot of water. It would be better to derive BAT conclusions for key water-consuming processes instead of assessing hardly traceable water consumption data for whole sites (DE).</li> <li>- Consumption of municipal fresh water/groundwater should be distinguished from consumption of seawater intake for fishmeal and fish oil production (DK, EUfishmeal).</li> <li>- The demand for water consumption in gelatine production is to a large extent caused by high quality requirements and by food and pharma regulations (CEFIC).</li> <li>- ABP processes typically use a lot of water, but they also recover water from the raw materials during drying (EFPRA).</li> </ul> </li> </ul> <p><b><u>Amount of waste water discharged</u></b></p> <ul style="list-style-type: none"> <li>• 18 out of 24 IPs agree with the EIPPCB proposal for slaughterhouses, 1 disagrees and 5 do not provide answers.</li> <li>• 14 out of 24 IPs agree with the EIPPCB proposal for ABP installations, 3 partly agree, 1 disagrees and 6 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Waste water discharge should be assessed by distinguishing between different animals (pigs, bovine, and poultry) (DE).</li> <li>- Only direct discharge of waste water should be taken into account (DK).</li> <li>- The discharge is directly correlated to the potential for water recycling; the latter is affected by hygiene requirements (FR).</li> </ul> </li> </ul>

- Waste water discharge is a KEI at installation level (IE, CLITRAVI, UECBV).
- The waste water volume depends on the fresh water use which is determined by non-technical requirements (e.g. food legislation) (CEFIC).
- For fishmeal and fish oil production, waste water discharges of unpolluted and polluted seawater (e.g. from direct cooling) should be distinguished (DK, EUfishmeal).
- Huge variations in waste water discharge across the sectors are found due to different configurations (no discharge, reuse of waste water) (EFPRA).

**EIPPCB assessment**

- The TWG broadly agrees with the proposal.
- According to the current SA BREF, water consumption (and subsequently the amount of waste water discharged) is relevant for SA installations. Water reuse (whose degree is restricted by hygiene requirements) can also play a key role in the water balance of an installation. The discharge, raw materials and animal types, among other variables, can be collected in the questionnaires as contextual information.
- A categorisation according to products, processes and/or fuels could be used for the differentiation of the installations.
- Additionally, data on water consumption are proposed to be collected for specific processes for which water consumption is significant and consumption data can be obtained (see Section 2.2.4.1 and Section 2.2.4.2 ).
- Information on techniques applied to reduce water consumption can be part of the data collection as contextual information.
- According to experiences with other BREFs (e.g. FDM BREF), water consumption data are not generally considered confidential.
- Data for specific water consumption are proposed to be collected for the review of the SA BREF (see Section 2.3.1.3).
- Those types of water which are not reused and are discharged separately from process water (e.g. cooling water, run-off water) can be excluded from the calculation of water consumption and waste water discharge. This approach has been applied for the review of the FDM BREF.
- The drying of ABP generates large amounts of water that can be reused for other basic purposes. This has an influence on the consumption of fresh water.

**EIPPCB proposal**

- To change the original EIPPCB proposal as follows:
  - To include water consumption and waste water discharge as KEIs for SA installations.
  - The TWG to identify the contextual information (e.g. source of water, water reuse, type of processes, raw materials, product specifications, system boundaries) 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.

## 2.2.5.2 Specific processes

### 2.2.5.2.1 Slaughterhouses

#### Original EIPPCB proposal

To include water consumption as a KEI in slaughterhouses for the following specific processes: cleaning of floor areas and equipment, vehicle washing, lairage washing, carcass washing, poultry defeathering and scalding.

#### Summary of IPs

##### General

- Slaughterhouses may not monitor water consumption at process level (DE, DK, IE, NO, AVEC, CLITRAVI, ORGALIME, UECBV).
- It is appropriate to gather information about the techniques applied to reduce water consumption and to reuse water (IT).
- Water uses for specific processes vary between slaughterhouses, e.g. due to installation design, degree of automatisisation, equipment, cleaning strategies, number of shifts. (CLITRAVI, UECBV).

##### Cleaning of floor areas and equipment (all animals)

- 13 out of 24 IPs agree with the EIPPCB proposal, 4 partly agree, 1 disagrees and 6 do not provide answers.
- The main comment of the IPs is as follows:
  - Cleaning of surfaces and equipment requires a lot of water but this can be the result of hygiene requirements (DE).

##### Vehicle washing (all animals)

- 11 out of 24 IPs agree with the EIPPCB proposal, 5 partly agree, 2 disagree and 6 do not provide answers.
- The main comments of the IPs are as follows:
  - Vehicle washing requires a lot of water but this can be the result of hygiene requirements (DE).
  - Vehicle washing can be considered a part of the cleaning of floors and of equipment (ORGALIME).
  - It is appropriate to monitor the performance of the plant over time (IT).

##### Lairage washing (all animals)

- 9 out of 24 IPs agree with the EIPPCB proposal, 5 partly agree, 1 disagrees and 9 do not provide answers.
- The main comments of the IPs are as follows:
  - Lairage washing requires a lot of water but this can be the result of hygiene requirements (DE).
  - Lairage washing can be considered a part of the cleaning floors and equipment process (ORGALIME).

##### Carcass washing (all animals)

- 9 out of 24 IPs agree with the EIPPCB proposal, 4 partly agree, 2 disagree and 9 do not provide answers.
- The main comments of the IPs are as follows:
  - Carcasses of pigs, lambs and cattle are not washed (IE, CLITRAVI).
  - Carcass washing is not relevant for the slaughtering of pigs. It is an emerging technique for ruminants (UECBV).
  - Not aware of the water consumption of this process (DE).

##### Scalding (all animals)

- 11 out of 24 IPs agree with the EIPPCB proposal, 3 partly agree, 1 disagrees and 9 do not provide answers.

<ul style="list-style-type: none"> <li>The main comments of the IPs are as follows:             <ul style="list-style-type: none"> <li>Scalding is only relevant for the slaughtering of pigs and poultry (UK).</li> <li>Scalding should not consume water (DE).</li> </ul> </li> </ul> <p><b><u>Defeathering (poultry)</u></b></p> <ul style="list-style-type: none"> <li>11 out of 24 IPs agree with the EIPPCB proposal, 3 partly agree, 1 disagrees and 9 do not provide answers.</li> <li>The main comment of the IPs is as follows:             <ul style="list-style-type: none"> <li>Defeathering should not consume water (DE).</li> </ul> </li> </ul> <p><b><u>Additional processes</u></b></p> <ul style="list-style-type: none"> <li>Water consumption is relevant for sterilising slaughter tools (BE).</li> </ul>
<p><b>EIPPCB assessment</b></p> <p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>Water consumption is proposed as a KEI at installation level (see Section 2.2.5.1). By also collecting data at process level, the connection between reported consumption levels and the techniques used can be better understood.</li> <li>A categorisation according to products, processes and/or fuels could be used for the differentiation of the installations.</li> </ul> <p><b><u>Cleaning of floor areas and equipment (all animals)</u></b></p> <ul style="list-style-type: none"> <li>The IPs broadly agree with the EIPPCB proposal.</li> <li>Cleaning processes in slaughterhouses generally consume significant amounts of water.</li> </ul> <p><b><u>Vehicle washing (all animals)</u></b></p> <ul style="list-style-type: none"> <li>The majority of IPs support the EIPPCB proposal.</li> <li>Vehicle washing can consume relevant amounts of water due to specific hygiene requirements.</li> </ul> <p><b><u>Lairage washing (all animals)</u></b></p> <ul style="list-style-type: none"> <li>The majority of IPs support the EIPPCB proposal.</li> <li>This process can be considered a part of the overall cleaning of floor areas and equipment.</li> </ul> <p><b><u>Carcass washing (all animals)</u></b></p> <ul style="list-style-type: none"> <li>There are considerable doubts within the IPs as to whether carcass washing is relevant for a large variety of animals.</li> </ul> <p><b><u>Scalding (all animals)</u></b></p> <ul style="list-style-type: none"> <li>The majority of IPs support the EIPPCB proposal.</li> <li>Scalding tanks are generally refilled with water on a daily basis.</li> <li>Scalding is more relevant for the slaughtering of pigs and poultry.</li> </ul> <p><b><u>Defeathering (poultry)</u></b></p> <ul style="list-style-type: none"> <li>The majority of IPs support the EIPPCB proposal.</li> <li>Considerable amounts of water are generally used to wash the birds and transport the feathers away.</li> </ul> <p><b><u>Additional processes</u></b></p> <ul style="list-style-type: none"> <li>The current SA BREF points out that water is consumed for sterilisation.</li> <li>The availability of data for this specific process seems very limited.</li> </ul>
<p><b>EIPPCB proposal</b></p> <ul style="list-style-type: none"> <li>To include water consumption as a KEI for the following specific processes in slaughterhouses:             <ul style="list-style-type: none"> <li>cleaning of floors and equipment (all animals);</li> <li>vehicle washing (all animals);</li> </ul> </li> </ul>

- pig and poultry scalding;
- poultry defeathering.
- The TWG to identify the contextual information (e.g. different animals, cleaning strategies) 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 should be derived.

#### 2.2.5.2.2 Animal by-product installations

<b>Original EIPPCB proposal</b>
To include water consumption as a KEI in ABP installations for the following specific processes: cleaning of floor areas and equipment, boilers and condensers.
<b>Summary of IPs</b>
<p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>• ABP installations may not monitor water consumption at process level (DE, DK, IE, NO, EUfishmeal).</li> <li>• It is appropriate to gather information about the techniques applied to reduce water consumption and to reuse water (IT).</li> </ul> <p><b><u>Cleaning of floor areas and equipment</u></b></p> <ul style="list-style-type: none"> <li>• 13 out of 24 IPs agree with the EIPPCB proposal, 3 partly agree and 8 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Cleaning of surfaces and equipment requires a lot of water but this can be the result of hygiene requirements (DE, EFPPRA).</li> <li>- Water consumption in ABP installations is less relevant than in slaughterhouses (FR).</li> <li>- There is no relation between techniques used and consumption. Consumption depends on raw materials, plant configuration, and product mix. Integrated processes are optimised as a whole (CEFIC).</li> </ul> </li> </ul> <p><b><u>Boilers</u></b></p> <ul style="list-style-type: none"> <li>• 12 out of 24 IPs agree with the EIPPCB proposal, 4 partly agree, 1 disagrees and 7 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Steam production for process heating is one of the main consumers of water at ABP installations. Sites that meter water for the boilers can itemise their consumption (DE, EFPPRA).</li> <li>- Water consumption for boilers is measured in the majority of installations (IE, EUfishmeal).</li> <li>- There is no relation between techniques used and consumption. Consumption depends on raw materials, plant configuration, and product mix. Integrated processes are optimised as a whole (CEFIC).</li> <li>- Only boilers covered by the scope of the SA BREF should be considered (DK).</li> </ul> </li> </ul> <p><b><u>Condensers</u></b></p> <ul style="list-style-type: none"> <li>• 6 out of 24 IPs agree with the EIPPCB proposal, 5 partly agree, 3 disagree and 10 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Water-cooled condensers are less widely used in the sector compared to air-cooled condensers. Condensate may be recycled for basic purposes (DE, EFPPRA).</li> <li>- For rendering and fishmeal production, only fresh water consumption for cooling should be considered, and not seawater consumption (DE, EUfishmeal).</li> </ul> </li> </ul>



**Additional processes**

- Vehicle washing (BE, IT).
- For odour abatement, water is consumed in biofilters and wet scrubbers (EFPRA).

**EIPPCB assessment**

**Cleaning of floor areas and equipment**

- The IPs broadly agree with the EIPPCB proposal.
- Cleaning processes in ABP installations generally consume significant amounts of water.

**Boilers**

- The IPs broadly agree with the EIPPCB proposal.
- Steam is widely used in ABP installations and the associated water consumption can be significant.
- It seems that data for water consumption in boilers are available.

**Condensers**

- The contribution of water-cooled systems to the overall water consumption of ABP installations is questionable. Moreover, a part of these systems close to the sea (e.g. fishmeal and fish oil production) are once-through cooling systems using seawater.

**Additional processes**

- Vehicle washing can consume significant amounts of water due to specific hygiene requirements.
- Water is required for the treatment of waste gases in biofilters and wet scrubbers. The availability of related data seems limited.

**EIPPCB proposal**

- To include water consumption as a KEI for the following specific processes in ABP installations:
  - cleaning of floors and equipment;
  - boilers;
  - vehicle washing.
- The TWG to identify the contextual information (e.g. source of water, different raw materials processed, fuels used) 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 should be derived.

## 2.3 Data collection

### 2.3.1 Environmental performance levels

#### 2.3.1.1 Expression of BAT-AELs for emissions to air and water

<b>Original EIPPCB proposal</b>
<p>Proposal 14: The EIPPCB proposes:</p> <ul style="list-style-type: none"> <li>• to generally express BAT-AEPLs for emissions to air and to water in concentrations, if deemed appropriate coupled with abatement efficiencies;</li> <li>• during the drafting of the questionnaire(s), to clearly define all parameters influencing emission levels expressed as concentrations and abatement efficiencies (e.g. type of products/raw materials, boundaries of the process, flows of materials, product, pollutants and waste waters, specific operating conditions associated with the manufacture of products).</li> </ul>
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 10 out of 24 IPs agree with the proposal, 8 partly agree, 3 disagree and 4 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Data collection must include supporting information to qualify the data so that outliers are understood. Confidential data (water consumption, amount of product used) is a concern for data assessment (DE).</li> <li>- Express BAT-AE(P)Ls for emissions to water as specific load intervals due to water-saving measures. BAT-AELs might be expressed as concentrations where appropriate (DK, EUfishmeal).</li> <li>- Parameters influencing emissions are e.g. the type of animals slaughtered, multiple activities integrated in an ABP installation (FR).</li> <li>- BAT-AELs should be expressed as specific loads (per unit of mass of raw material treated or product generated) (SE, AVEC).</li> <li>- Concentrations of pollutants in waste water and air must be supplemented with information on daily loads. Low concentrations can be obtained simply by dilution of emissions (CLITRAVI, EUfishmeal, UECEBV).</li> <li>- BAT-AEPLs should consider information on type of animal species (NO), cleaning area, religious/cultural slaughter practices, and definition of product in relation to co-product processing (UECEBV).</li> <li>- Emissions from gelatine manufacturing are generally very low; energy consumption is the main KEI (CEFIC).</li> <li>- BAT-AELs for emissions to air and water must be wide enough to cover the extensive variations across the ABP installations sector. Data collection must include supporting information to qualify the data so that deviations are understood (EFPRA).</li> <li>- For odour it may be more effective to set BAT-AELs on abatement efficiency using the most common odorous species such as ammonia and hydrogen sulphide, as these are easier to measure more reliably than olfactometry (EFPRA).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• According to the BREF Guidance (Commission Implementing Decision 2012/119/EU, p. 21), BAT-AELs can be expressed as concentrations (e.g. mg/Nm<sup>3</sup>) or specific loads (e.g. g of TVOC/kg ABP treated). To set BAT-AELs as specific loads, the appropriate contextual information (e.g. the volume flow of waste gases through the outlet (Nm<sup>3</sup>) and the amount of ABP treated (kg) – during the same time period) would need to be collected.</li> <li>• The setting of BAT-AELs as specific loads in some sectors may be hampered by the prevailing influence of product specifications and process-integrated techniques. The level of detail and amount of contextual information needed to analyse and understand these influences makes it highly unlikely that meaningful BAT-AELs expressed as specific</li> </ul>

loads could be derived. These were some of the aspects that did not allow the derivation of BAT-AELs expressed as specific loads during the review of the FDM BREF which is about to be finalised.

- Expressing BAT-AELs for emissions to air and to water in concentrations, and, if deemed appropriate, coupled with abatement efficiencies, leaves room for a flexible approach to suit particular circumstances (processes, units, etc.).
- In some recent BREFs, BAT-AELs are expressed in concentrations, sometimes in combination with an abatement efficiency to take into account that some waste water or waste gas streams carry high pollutant loads (e.g. for COD/TOC). A similar approach could be envisaged for the SA BREF review.
- As indicated in the EIPPCB proposal, all parameters influencing emission levels should be defined during the drafting of the questionnaire(s).

#### **EIPPCB proposal**

- To keep the original EIPPCB proposal unchanged except for minor modifications:
  - 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, specific operating conditions).

**2.3.1.2 Averaging periods for BAT-AELs related to emissions to air and to water**

<b>Original EIPPCB proposal</b>
<p>Proposal 15: For channelled emissions to air, the EIPPCB proposes 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, the EIPPCB proposes to generally express BAT-AELs for direct discharges as daily averages, obtained via 24-hour flow-proportional composite samples.</p>
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 13 out of 24 IPs agree with the proposal, 6 partly agree, 2 disagree and 3 do not provide answers.</li> <li>• The main comments of the IPs are as follows:             <ul style="list-style-type: none"> <li>- Regarding averaging periods for emissions to air:                 <ul style="list-style-type: none"> <li>▪ Daily average should be defined for continuously measured parameters (EFPRA).</li> <li>▪ Continuous measurement is not applied (EUfishmeal).</li> <li>▪ Consideration should be given for setting of BAT-AELs for emissions of odour (PT, NO, UK).</li> <li>▪ Emissions of odour, dust and ammonia are not significant from gelatine manufacturing and shall be monitored once every 3 years and additionally in case of complaints (CEFIC).</li> </ul> </li> <li>- Regarding averaging periods for emissions to water:                 <ul style="list-style-type: none"> <li>▪ Allow also for two-hour composite sampling or qualified composite sampling (CZ, DE).</li> <li>▪ Data from gelatine manufacturing are available only for COD, NH<sub>4</sub>-N and TSS (CEFIC).</li> <li>▪ The 24-hour flow-proportional sampling should only be applicable for major treated waste water discharges (EFPRA).</li> </ul> </li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The majority of IPs support the EIPPCB proposal.</li> <li>• Emissions to air:             <ul style="list-style-type: none"> <li>- Some IPs reported periodic monitoring for most of the proposed KEIs for emissions to air. Continuous monitoring was reported for dust, HCl, CO, SO<sub>x</sub> and NO<sub>x</sub> emissions from incineration of carcasses by 2 MS.</li> <li>- Collection of short-term emission data for setting BAT-AELs as short-term averages seems feasible.</li> <li>- Definitions of averaging periods, e.g. daily averages in the case of continuous measurements, have been provided in all recently adopted BAT conclusions (e.g. WT BREF).</li> <li>- The derivation of BAT-AELs will depend on the availability of data for those parameters or substances defined as KEIs.</li> </ul> </li> <li>• Emissions to water:             <ul style="list-style-type: none"> <li>- 24-hour flow-proportional composite sampling is a standard sampling procedure for emissions to water. Recently adopted BAT conclusions specify that, alternatively, spot samples may be taken, provided that the effluent is appropriately mixed and homogeneous.</li> <li>- According to the IPs, short-term averages seem more common and accessible for data collection purposes.</li> <li>- The derivation of BAT-AELs depends on the availability of data for those parameters or substances defined as KEIs.</li> <li>- Zn is proposed as a KEI for both direct and indirect discharges (see Section 2.2.2.1.1).</li> </ul> </li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: for channelled emissions to air, the EIPPCB proposes to generally express BAT-AELs as short-term averages, i.e. as daily</li> </ul>

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

### 2.3.1.3 Specific water and energy consumption / waste water discharge

<b>Original EIPPCB request</b>
Request 15: TWG members are asked to provide their opinion for specific waste water discharge, energy and water consumption, on which units would be suitable for collecting data for the SA sector (differentiating by process if necessary), e.g. consumption of energy/water per unit of mass of products/materials generated or processed.
<b>Summary of IPs</b>
<p><b><u>Energy consumption units</u></b></p> <ul style="list-style-type: none"> <li>- MWh/tonne (AT).</li> <li>- MJ/tonne of slaughtered animals; MJ/tonne of processed ABP (BE).</li> <li>- kWh/tonne of raw materials (for thermal and electrical energy) (DE).</li> <li>- kWh/tonne of raw materials, yearly average (DK, EFPPRA, EUfishmeal).</li> <li>- kWh/tonne of carcasses, yearly average (ES, CLITRAVI).</li> <li>- MWh/kg (FI).</li> <li>- MJ/tonne, yearly average (IE, ORGALIME).</li> <li>- kWh/tonne of product; or MJ/tonne of product, yearly average (IT).</li> <li>- kWh/tonne of carcasses produced; kWh/tonne of ABP treated (SE).</li> <li>- MWh/tonne, yearly average (UK).</li> <li>- kW/tonne, yearly average (AVEC).</li> <li>- kWh/tonne of water evaporated (for thermal energy) (EFPPRA).</li> <li>- Units depend on type of animal species and products (UECBV).</li> <li>- kW/h in winter and in summer (CZ).</li> </ul> <p><b><u>Water consumption units</u></b></p> <ul style="list-style-type: none"> <li>- m<sup>3</sup>/day; m<sup>3</sup>/year (AT).</li> <li>- m<sup>3</sup>/tonne slaughtered animals; m<sup>3</sup>/tonne processed animal by-products (BE).</li> <li>- m<sup>3</sup>/tonne of raw materials (DE).</li> <li>- m<sup>3</sup>/tonne of raw materials, yearly average (DK, CLITRAVI, EFPPRA, EUfishmeal).</li> <li>- m<sup>3</sup>/tonne of carcasses, yearly average (ES).</li> <li>- m<sup>3</sup>/kg (FI).</li> <li>- m<sup>3</sup>/tonne, yearly average (IE, UK).</li> <li>- m<sup>3</sup>/tonne of product, yearly average (IT).</li> <li>- m<sup>3</sup>/tonne of carcasses produced; m<sup>3</sup>/tonne of ABP treated (SE).</li> <li>- m<sup>3</sup>/tonne, yearly average (AVEC).</li> <li>- m<sup>3</sup>, yearly average (ORGALIME).</li> <li>- Units depend on type of animal species and products (UECBV).</li> </ul> <p><b><u>Waste water discharge units</u></b></p> <ul style="list-style-type: none"> <li>- m<sup>3</sup>/day (AT, CZ).</li> <li>- m<sup>3</sup>/tonne of slaughtered animals; m<sup>3</sup>/tonne processed animal by-products (BE).</li> <li>- m<sup>3</sup>/tonne of raw materials, yearly average (DE, DK, CLITRAVI, EFPPRA, EUfishmeal).</li> <li>- m<sup>3</sup>/tonne of carcasses, yearly average (ES).</li> <li>- m<sup>3</sup>/kg (FI).</li> <li>- m<sup>3</sup>/tonne, yearly average (IE, UK).</li> <li>- m<sup>3</sup>/tonne of carcasses produced, m<sup>3</sup>/tonne of ABP treated; daily average (SE).</li> <li>- kg of pollutant/kg of carcasses, daily average (AVEC).</li> <li>- Units depend on type of animal species and products (UECBV).</li> <li>- m<sup>3</sup> (CEFIC).</li> </ul>

**EIPPCB assessment**

**Energy consumption units**

- The majority of IPs are in favour of expressing specific energy consumption as kWh per tonne of raw material. Slaughtered animals are the raw material to be considered for slaughterhouses. ABP are the raw material to be considered for ABP installations.
- The majority of IPs are in favour of a yearly averaging period.
- It is common to distinguish thermal from electrical energy consumption.

**Water consumption units**

- The majority of IPs are in favour of expressing specific water consumption as m<sup>3</sup> per tonne of raw material. Slaughtered animals are the raw material to be considered for slaughterhouses. ABP are the raw material to be considered for ABP installations.
- The majority of IPs are in favour of a yearly averaging period.

**Waste water discharge units**

- The majority of IPs are in favour of expressing the amount of specific water discharged as m<sup>3</sup> per tonne of raw material. Slaughtered animals are the raw material to be considered for slaughterhouses. ABP are the raw material to be considered for ABP installations.
- The majority of IPs are in favour of a yearly averaging period.
- Several MS regulate the volume of waste water discharge per time in IED permits.

**EIPPCB proposal**

- To collect data on specific energy consumption, both for thermal and for electrical energy, based on a yearly averaging period, and expressed as:
  - kWh per tonne of raw material (slaughtered animals), for slaughterhouses;
  - kWh per tonne of raw material (animal by-products), for ABP installations.
- To collect data on specific water consumption and specific waste water discharge, based on a yearly averaging period, and expressed as:
  - m<sup>3</sup> per tonne of raw material (slaughtered animals), for slaughterhouses;
  - m<sup>3</sup> per tonne of raw material (animal by-products), for ABP installations.

### 2.3.2 Focus of the plant-specific data collection for animal by-product installations

The selection of installations for the data collection is referred to in Section 3.4.1.

<p><b>Original EIPPCB request/proposal</b></p> <p>Request 13: TWG members are asked to provide the number of installations permitted for IED activities under point 6.5 of Annex I to the IED according to the type of animal by-products installation in each Member State.</p> <p>Proposal 13: The EIPPCB proposes to focus the data collection for the review of the SA BREF on the following types of animal by-products installations:</p> <ul style="list-style-type: none"> <li>- rendering (of bones, feathers, carcasses, fats, blood, skins, ...);</li> <li>- fishmeal and fish oil production;</li> <li>- blood processing (plasma and dried red cells production);</li> <li>- gelatine manufacturing;</li> <li>- incineration of animal by-products.</li> </ul>
<p><b>Summary of IPs</b></p> <ul style="list-style-type: none"> <li>• According to the IPs there are: <ul style="list-style-type: none"> <li>- 217 rendering installations across 10 MS (AT, BE, DE, DK, ES, FI, FR, IE, PL, PT); 4 rendering installations in NO;</li> <li>- 11 fishmeal and fish oil production installations across 5 MS (DK, ES, FR, PL, PT); 11 fishmeal and fish oil production installations in NO;</li> <li>- 9 blood processing installations across 2 MS (DE, ES); 1 blood processing installation in NO;</li> <li>- 11 gelatine manufacturing installations across 5 MS (BE, DE, FR, NL, UK);</li> <li>- 13 installations incinerating carcasses across 4 MS (DK, ES, PL, PT).</li> </ul> </li> <li>• Additional ABP installations: SE reported 2 installations for composting, 5 installations for anaerobic digestion.</li> </ul>
<p><b>EIPPCB assessment</b></p> <ul style="list-style-type: none"> <li>• The majority of ABP installations are rendering installations.</li> <li>• Little information is provided about additional types of ABP installations (e.g. anaerobic digestion). However, techniques used to prevent or reduce emissions and consumption in these installations could be similar to other ABP installations.</li> </ul>
<p><b>EIPPCB proposal</b></p> <ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: to focus the data collection for the review of the SA BREF on, but not limit it to, the following types of animal by-product installations: <ul style="list-style-type: none"> <li>- rendering (of bones, feathers, carcasses, fats, blood, skins, ...);</li> <li>- fishmeal and fish oil production;</li> <li>- blood processing (plasma and dried red cells production);</li> <li>- gelatine manufacturing;</li> <li>- incineration of carcasses.</li> </ul> </li> </ul>

## 2.3.3 Questionnaire(s) for gathering plant-specific data and information

<b>Original EIPPCB proposal</b>
<p>Proposal 16: The EIPPCB proposes:</p> <ul style="list-style-type: none"> <li>- To follow the established BREF process for the collection of plant/installation-specific data via questionnaires including the following: <ul style="list-style-type: none"> <li>o the preparation of the draft questionnaire(s) by the EIPPCB followed by the commenting of the whole TWG, if necessary in several iterations;</li> <li>o the organisation of a questionnaire(s) workshop to finalise the questionnaire(s);</li> <li>o the testing of the draft final questionnaire(s) by a selected (small) number of plants/installations;</li> <li>o the preparation of the final questionnaire(s) by the EIPPCB;</li> <li>o 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;</li> <li>o the filling in of the questionnaire(s) by the plants/installations;</li> <li>o the collection of the filled-in questionnaires by Member States' representatives;</li> <li>o 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);</li> <li>o the submission of the quality-checked questionnaires to the TWG via BATIS by Member States' representatives.</li> </ul> </li> <li>- That the TWG decide on the content and format of the questionnaires during the preparation of the questionnaire as described above.</li> <li>- To collect data over the last three years or for the last three measurement campaigns.</li> </ul>
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 10 IPs agree with the proposal, 5 partly agree and 9 do not provide answers.</li> <li>• The main comments expressed were as follows: <ul style="list-style-type: none"> <li>- A data workshop should be added to the process after the submission of questionnaires (DK, CLITRAVI, UECBV).</li> <li>- Do not allow the possibility to distribute the final questionnaire 'in cooperation with the other stakeholders'. Instead, the distribution of the final questionnaire should be done only by the MS to avoid double requests eventually addressed to the same operators (IT).</li> <li>- The quality check of the filled-in questionnaires should be carried out only by MS. It should be clarified in the related bullet that the word 'possibly' refers only to the 'help of a checklist' to be used for carrying out the quality check (IT).</li> <li>- Provide also sector-specific guidance to support the data questionnaire. This guidance should include a definition on final products (UK).</li> <li>- Regarding the quality check of filled-in questionnaires, the active involvement of TWG members from industrial organisations is necessary (CLITRAVI).</li> <li>- It might not always be possible to provide 3 years data (EUfishmeal).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The majority of IPs support the EIPPCB proposal. <ul style="list-style-type: none"> <li>- The original EIPPCB proposal addresses the organisation of the data collection process. TWG workshops after the data collection have been organised by the EIPPCB during recent BREF reviews and could also be carried out during the review of the SA BREF.</li> <li>- According to the original EIPPCB proposal, MS representatives are responsible for the distribution of the final questionnaire(s). This can be done in cooperation with other stakeholders, if deemed necessary, to facilitate the procedure.</li> <li>- According to the original EIPPCB proposal, MS representatives are responsible for the quality check of the filled-in questionnaires. This can be done possibly with the help of a checklist, to facilitate the procedure. Industrial organisations can possibly</li> </ul> </li> </ul>



<p>assist plant operators in filling in the questionnaires and to ensure that quality information is provided before the MS quality check.</p> <ul style="list-style-type: none"> <li>- A questionnaire user’s manual can be developed by the EIPPCB, as has been done in recent BREF reviews.</li> </ul>
<p><b>EIPPCB proposal</b></p>
<ul style="list-style-type: none"> <li>• To change the EIPPCB proposal as follows:             <ul style="list-style-type: none"> <li>- To follow the established BREF process for the collection of plant/installation-specific data via questionnaire(s) including the following:                 <ul style="list-style-type: none"> <li>○ the preparation of the draft questionnaire(s) by the EIPPCB followed by the commenting of the whole TWG, if necessary in several iterations;</li> <li>○ the organisation of a questionnaire(s) workshop to finalise the questionnaire(s);</li> <li>○ the testing of the draft final questionnaire(s) by a selected (small) number of plants/installations;</li> <li>○ the preparation of the final questionnaire(s) and the user’s manual by the EIPPCB;</li> <li>○ 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;</li> <li>○ the filling in of the questionnaire(s) by the plants/installations;</li> <li>○ the collection of the filled-in questionnaires by Member States’ representatives;</li> <li>○ 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 develop;</li> <li>○ the submission of the quality-checked non-confidential questionnaires to the TWG via BATIS by Member States’ representatives.</li> </ul> </li> <li>- That the TWG decides on the content and format of the questionnaires during their preparation as described above.</li> <li>- To collect available data for the reference years 2019, 2018 and 2017.</li> </ul> </li> </ul>

**2.3.4 Confidentiality issues**

<p><b>Original EIPPCB proposal</b></p>
<p>Proposal 17: The EIPPCB proposes to design the questionnaire(s) in a way that avoids requesting confidential data as much as possible so that data provided by operators can be posted directly onto BATIS and shared with the whole TWG.</p>
<p><b>Summary of IPs</b></p>
<ul style="list-style-type: none"> <li>• 15 IPs agree with the proposal, 4 partly agree and 5 do not provide answers.</li> <li>• The main comments expressed were as follows:             <ul style="list-style-type: none"> <li>- Sometimes operators do not wish to disclose their annual throughputs. An option might be to split concerned data, e.g. into size categories, or use site identifiers for the reference plants that are only disclosed to MS representatives where the plants are located (DE).</li> <li>- There may be confidentiality issues for production capacity and energy consumption data. If production capacity is an issue then it may be possible to assign sites to suitable ranges, e.g. high, medium and low capacity. Any decision on confidentiality should take account of current availability of the data (UK).</li> <li>- A TWG decision on keeping all data non-confidential is preferred (DK).</li> <li>- The decision to include confidential data should be decided at TWG level and individual validation by MS should be avoided (FR).</li> <li>- Do not disclose annual raw material throughput for ABP installations. Sites can be split into size categories (EFPPA).</li> </ul> </li> </ul>
<p><b>EIPPCB assessment</b></p>
<ul style="list-style-type: none"> <li>• The TWG broadly agrees with the EIPPCB proposal.</li> </ul>

- The decisions related to what concrete confidential data might need to be included in the questionnaire(s) could be taken by the TWG at the workshop on the questionnaire(s) development (see Section 2.3.2).
- The transparency of the information exchange was discussed by the IED Article 13 Forum on 6 June 2013. Since then, the established practice in the Sevilla process is to post the non-confidential questionnaire versions in BATIS including the plant name and location. This ensures transparency and allows the cross-checking of the information provided.
- Also, at the meeting of the IED Article 13 Forum of 6 June 2013 it was decided that any confidentiality claims should be fully justified, with a mechanism for checking why they were granted and what the risks of sharing such data would be. As mentioned above, the confidential information needed could be agreed by the TWG at the questionnaire development workshop. The MS representatives would then need to ensure, as part of the questionnaire quality check, that these data are submitted separately (and only) to the EIPPCB and the questionnaires without confidential data are posted on BATIS.
- In principle (as recognised in the BREF Guidance), it is possible to use confidential data (e.g. raw material throughput) in the BREF, e.g. by splitting them into size categories or by anonymising them.
- Different practical solutions exist for the collection of confidential information:
  - The fields in the questionnaires requiring confidential data may be marked with a different background colour; a separate sheet of the questionnaire may be used.
  - The questionnaire version containing the parts claimed to be confidential may be submitted directly (and only) to the EIPPCB via email and not shared with the whole TWG on BATIS.

#### **EIPPCB proposal**

- To keep the original EIPPCB proposal unchanged: 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 in BATIS.

## 2.4 Next steps

This section aims to present the next steps of the SA BREF review related to the collection of data and information.

The process to prepare questionnaire(s) and collect information via questionnaire(s) is presented in Section 2.3.2. The proposed tentative timeline associated with this process is presented below. This information will allow the update of those chapters of the SA BREF on emission and consumption levels.

In addition to the collection of information via questionnaire(s), it is necessary to collect bulk information in order to update the text of the SA BREF, namely information on the applied processes and techniques (see Section 3.2), on the techniques to be considered for the determination of BAT (see Section 3.5) and on emerging techniques (see Section 3.5). Information will also be needed to update the chapters on general information of the SA BREF as well as the remaining Annexes (see Section 3.2).

Several documents have already been provided by TWG members to update some parts of the current SA BREF. They are posted in the following BATIS folder:

[Forum > Slaughterhouses and Animal By-products Industries > 02 First SA BREF review 2018- > 04 Information collection](#)

Some documents contain information updated more recently, i.e. after 2010:

- State of the art of the Slaughter and Animal By-products industries. Description of Austrian Plants (Austria, 2016).
- Update of information concerning environmental issues of slaughterhouses (Denmark, 2015).
- Sector performance review 2010. Slaughterhouses & animal by-products industries (The United Kingdom, 2010).
- EUfishmeal input to the BREF SA TWG (EUfishmeal, 2019).
- Slaughterhouses and producers of Animal By-products in the Nordic Countries (Nordic Council of Ministers, 2016).

**EIPPCB proposal**

**Tentative timeline of the data and information collection**

<b>Step</b>	<b>Tentative time</b>
EIPPCB to issue the first draft questionnaire.	Mid-September 2019
TWG to provide proposals of well-performing plants for the data collection.	Mid-September 2019
TWG feedback on the draft questionnaire.	Mid-October 2019
EIPPCB to compile the list of well-performing plants and to check its completeness; if necessary, ask TWG members to amend/complete the list.	Mid-October 2019
EIPPCB to issue the second draft questionnaire.	Mid-November 2019
Workshop on the questionnaire finalisation.	End of November 2019
EIPPCB to issue the third draft questionnaire.	Mid-December 2019
Questionnaire testing.	Mid-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.	Mid-February 2020
Submission of filled-in questionnaires through BATIS after quality checks by Member States.	End of April 2020

### 3 ITEMS NOT PROPOSED FOR DISCUSSION AT THE KICK-OFF MEETING

#### 3.1 Scope of the SA BREF

##### 3.1.1 Independently operated waste water treatment plants

<b>Original EIPPCB proposal</b>
Proposal 2: The EIPPCB proposes to include in the scope of the SA BREF the IED Annex I point 6.11 activity (i.e. independently operated treatment of waste water not covered by Directive 91/271/EEC) when the main pollutant load originates from IED Annex I point 6.4 (a) and/or point 6.5 activities.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 18 out of 24 IPs agree with the proposal, 1 partly agrees, 4 disagree and 1 does not provide an answer.</li> <li>• The main comments of the IPs which disagree or partly agree are as follows:             <ul style="list-style-type: none"> <li>- Waste and waste water were discussed during the WT BREF review and should be excluded from the SA BREF (EBA).</li> <li>- This issue is regulated under Directive 91/271/EEC concerning urban WWTPs (AVEC, CLITRAVI, EUfishmeal, UECBV).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the proposal.</li> <li>• The activity listed in point 6.11 of IED Annex I is not covered by Directive 91/271/EEC.</li> <li>• The WT BREF covers the 6.11 activity only when the treated waste water is discharged by an installation undertaking activities covered under points 5.1 (a) to (j), 5.3 or 5.5 of IED Annex I; there is therefore no overlap with the scope proposed by the EIPPCB. As for waste, the interface with the scope of the WT BREF is described in Section 2.1.2.3.</li> <li>• There is no dedicated BREF for the activity listed in point 6.11 of IED Annex I which is instead addressed in sector-specific BREFs (for instance in the FDM and WT BREFs), depending on where the main pollutant load originates.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To keep the original EIPPCB proposal unchanged, except for editorial improvements: 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 specified in points 6.4 (a) and/or 6.5 of IED Annex I.</li> </ul>

### 3.1.2 Combined treatment of waste water

<b>Original EIPPCB proposal</b>
Proposal 3: The EIPPCB proposes 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 IED Annex I point 6.4 (a) and/or point 6.5 activities and that the waste water treatment is not covered by Directive 91/271/EEC.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 17 out of 24 IPs agree with the proposal, 2 partly agree, 4 disagree and 1 does not provide an answer.</li> <li>• The main comments of the IPs which disagree or partly agree are as follows:             <ul style="list-style-type: none"> <li>- Modify the proposal as follows: "... different origins, carried out within the same installation, provided that ..." (IT).</li> <li>- An IED installation cannot be responsible for a third-party WWTP (AVEC).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the proposal.</li> <li>• This proposal relates to the treatment of waste water in installations falling under the scope of the SA BREF.</li> <li>• The proposal concerning the combined treatment of waste water is consistent with the approach followed in the scope of other BAT conclusions (e.g. in the FDM BREF).</li> <li>• ELVs in the permits will be based on the relevant BAT conclusions, depending on where the main pollutant load originates.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To keep the original EIPPCB proposal unchanged, except for editorial improvements: 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 activities listed in points 6.4 (a) and/or 6.5 of IED Annex I and that the waste water treatment is not covered by Directive 91/271/EEC.</li> </ul>

### 3.1.3 Combustion gases in direct contact with the materials

<b>Original EIPPCB request</b>
Request 1: The TWG is asked to provide a list of processes in which combustion gases are used for direct contact heating, drying or any other treatment of objects or materials.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• The processes in which combustion gases are used for direct contact heating, drying or any other treatment of objects or materials are as follows:             <ul style="list-style-type: none"> <li>- Pig singeing (AT, DK, ES, CLITRAVI).</li> <li>- Hair roasting (ES, CLITRAVI).</li> <li>- ABP drying: in general (ES), bones for gelatine production (FR), gelatine in specific cases (CEFIC), fishmeal (DK).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The current SA BREF mentions that fishmeal is almost exclusively dried indirectly using steam.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To take into account the information provided in the forthcoming work on the review of the SA BREF.</li> </ul>

## 3.2 Structure of the BREF and of its BAT conclusions

### 3.2.1 Structure of the BREF

<p><b>Original EIPPCB proposal</b></p> <p>Proposal 6: The EIPPCB proposes to use the following structure for the SA BREF:</p> <ul style="list-style-type: none"> <li>- Preface</li> <li>- Scope</li> <li>- Chapter 1: General information</li> <li>- Chapter 2: General processes and techniques <ul style="list-style-type: none"> <li>o General current emission and consumption levels</li> <li>o General techniques to consider in the determination of BAT</li> <li>o General emerging techniques</li> </ul> </li> <li>- Chapter 3: Slaughterhouses <ul style="list-style-type: none"> <li>o Current emission and consumption levels</li> <li>o Techniques to consider in the determination of BAT</li> <li>o Emerging techniques</li> </ul> </li> <li>- Chapter 4: Animal by-products installations <ul style="list-style-type: none"> <li>o Current emission and consumption levels</li> <li>o Techniques to consider in the determination of BAT</li> <li>o Emerging techniques</li> </ul> </li> <li>- Chapter 5: BAT conclusions</li> <li>- Chapter 6: Concluding remarks and recommendations for future work</li> <li>- References</li> <li>- Glossary of terms and abbreviations</li> <li>- Annexes</li> </ul>
<p><b>Summary of IPs</b></p> <ul style="list-style-type: none"> <li>• 11 out of 24 IPs agree with the proposal, 11 partly agree, 1 disagrees and 1 does not provide an answer.</li> <li>• The mains comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- "Applied processes and techniques" should be addressed separately in each of the Chapters 2, 3 and 4, in brevity (e.g. flow diagrams with short descriptions); the "current emission and consumption levels" section can be addressed in a few tables, similar to the approach used in the revised FDM BREF; there are many BAT candidates that could easily be generalised (DE).</li> <li>- Chapter 3 and the BREF sections corresponding to slaughterhouses should be divided by animal species as well as by degree of automation (DK, ES, IE, AVEC, CLITRAVI, UECBV).</li> <li>- Different types of ABP installations should have separate subchapters in the BREF (DK, NO, EUfishmeal).</li> <li>- Delete the gelatine chapter, if it is excluded from the scope (CEFIC).</li> <li>- Organise techniques in Chapter 2 according to a process flow diagram, with subheadings, e.g. raw material handling, processing, product handling, ancillary operation, odour controls (EFPRA).</li> <li>- The general techniques in Chapter 2 can be associated to different consumption and emission levels (ORGALIME).</li> </ul> </li> </ul>
<p><b>EIPPCB assessment</b></p> <ul style="list-style-type: none"> <li>• BREFs generally contain a chapter on applied processes and techniques.</li> <li>• Structuring the first level of the headings in Chapters 3 and 4 by animal species and ABP, respectively, is consistent with the structure of the KEIs proposed.</li> <li>• The general processes and techniques are commonly organised in BREFs by their main environmental benefit.</li> <li>• Techniques to consider in the determination of BAT will be revised and similar techniques can be merged. They can also be further grouped according to their environmental benefit, as has been done in previously published BREFs. Information</li> </ul>

relevant for several sectors is best placed in Chapter 2. Information specific to certain sectors is best placed in the corresponding sections of Chapters 3 and 4.

- Consumption and emission levels in Chapter 2 can be shown in graphs and tables with an indication of which animal species or ABP they refer to.

### **EIPPCB proposal**

To change the original EIPPCB proposal as follows: to generally use the following structure, which can be adapted depending on the information and data collected during the SA BREF review:

- Preface
- Scope
- Chapter 1: General information about the SA sector
- Chapter 2: General processes and techniques across the SA sector
  - General applied processes and techniques
  - General current emission and consumption levels
  - General techniques to consider in the determination of BAT
  - General emerging techniques
- Chapter 3: Slaughterhouses
  - Section 3.1: Cattle
    - General information about the sector
    - Applied processes and techniques
    - Current emission and consumption levels
    - Techniques to consider in the determination of BAT
    - Emerging techniques
  - Section 3.2: Pigs
    - General information about the sector
    - Applied processes and techniques
    - Current emission and consumption levels
    - Techniques to consider in the determination of BAT
    - Emerging techniques
  - Section 3.3: Poultry
    - General information about the sector
    - Applied processes and techniques
    - Current emission and consumption levels
    - Techniques to consider in the determination of BAT
    - Emerging techniques
  - Section 3.4: Other animal species
    - General information about the sector
    - Applied processes and techniques
    - Current emission and consumption levels
    - Techniques to consider in the determination of BAT
    - Emerging techniques
- Chapter 4: Animal by-product installations
  - Section 4.1: Rendering
    - General information about the sector
    - Applied processes and techniques
    - Current emission and consumption levels
    - Techniques to consider in the determination of BAT
    - Emerging techniques
  - Section 4.2: Fishmeal and fish oil production
    - General information about the sector
    - Applied processes and techniques
    - Current emission and consumption levels
    - Techniques to consider in the determination of BAT
    - Emerging techniques
  - Section 4.3: Blood processing
    - General information about the sector



<ul style="list-style-type: none"> <li>▪ Applied processes and techniques</li> <li>▪ Current emission and consumption levels</li> <li>▪ Techniques to consider in the determination of BAT</li> <li>▪ Emerging techniques</li> <li>- Section 4.4: Gelatine manufacturing <ul style="list-style-type: none"> <li>▪ General information about the sector</li> <li>▪ Applied processes and techniques</li> <li>▪ Current emission and consumption levels</li> <li>▪ Techniques to consider in the determination of BAT</li> <li>▪ Emerging techniques</li> </ul> </li> <li>- Section 4.5: Incineration of animal by-products <ul style="list-style-type: none"> <li>▪ General information about the sector</li> <li>▪ Applied processes and techniques</li> <li>▪ Current emission and consumption levels</li> <li>▪ Techniques to consider in the determination of BAT</li> <li>▪ Emerging techniques</li> </ul> </li> <li>• Chapter 5: BAT conclusions</li> <li>• Chapter 6: Concluding remarks and recommendations for future work</li> <li>• References</li> <li>• Glossary of terms and abbreviations</li> <li>• Annexes</li> </ul>
---

### 3.2.2 Structure of the BAT conclusions

<b>Original EIPPCB proposal</b>
Proposal 7: The EIPPCB proposes to use the structure of the current BAT conclusions.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 12 out of 24 IPs agree with the proposal, 8 partly agree, 1 disagrees and 3 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- BAT conclusions relating to equipment, consumption and emissions should be sector- or animal-species-specific, whereas BAT conclusions on common techniques (e.g. EMS) should be general (DK, IE, ES, UK, AVEC, CLITRAVI, UECBV).</li> <li>- Create separate sections for BAT conclusions corresponding to different ABP activities (EUfishmeal, ORGALIME).</li> <li>- Move the BAT conclusions that do not apply to gelatine manufacturing from Section 5.1 to the specific chapters of BAT conclusions (CEFIC).</li> <li>- Some BAT conclusions included in Section 5.1 can be moved to the sector-specific BAT conclusions (DK, EUfishmeal).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The structure of BAT conclusions is commonly consistent with the structure of the BREF, i.e. different sections for BAT conclusions can be included according to animal species and ABP, depending on the information and data collected during the SA BREF review.</li> <li>• The content of BAT conclusions will be proposed according to the information and data collected during the SA BREF review.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: 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.</li> </ul>

### 3.3 Key environmental Issues

#### 3.3.1 Emission to water

##### 3.3.1.1 Chemical oxygen demand (COD) and/or total organic carbon (TOC)

<b>Original EIPPCB proposal</b>
To include chemical oxygen demand (COD) and/or total organic carbon (TOC) as a KEI for slaughterhouses and animal by-products installations.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 16 out of 24 IPs agree with the proposal, 6 partly agree, 1 disagrees and 1 does not provide an answer.</li> <li>• The main comments of the IPs are as follows:             <ul style="list-style-type: none"> <li>- TOC data are not usually monitored or regulated for WWTPs with direct discharge (DK, IE, UK, AVEC, CLITRAVI, UECEBV).</li> <li>- COD and TOC should be covered by the SA BREF (BE).</li> <li>- COD or TOC should be covered by the SA BREF (EFPRA).</li> <li>- High chloride concentrations may influence COD measurements (DK, EUfishmeal).</li> <li>- TOC does not provide a direct correlation with environmental impact (UECEBV).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the EIPPCB proposal.</li> <li>• According to the IPs, COD and/or TOC is monitored in 8 MS, so there may be data available.</li> <li>• Standard methods for COD analysis imply the use of very toxic compounds (i.e. chromate and mercury).</li> <li>• TOC could be used as an alternative parameter to COD and this has been recognised in recent BREF reviews (e.g. CWW, FDM, WT). In some cases, BAT-AELs were set for TOC and COD to be used as alternatives to each other although TOC is mentioned as the preferred option.</li> <li>• According to the ROM REF, the most widespread COD methods use mercury salts to suppress the influence of inorganic chloride.</li> <li>• COD/TOC can typically be abated by a downstream (urban) WWTP with biological treatment and is therefore not relevant for indirect discharges.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows:             <ul style="list-style-type: none"> <li>- To include chemical oxygen demand (COD) and total organic carbon (TOC) as a KEI, for direct discharges only.</li> <li>- 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 a preference being given to TOC.</li> </ul> </li> </ul>

### 3.3.1.2 Total suspended solids (TSS)

<b>Original EIPPCB proposal</b>
To include total suspended solids (TSS) as a KEI for slaughterhouses and animal by-products installations.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 17 out of 24 IPs agree with the proposal, 3 partly agree, 3 disagree and 1 does not provide an answer.</li> <li>• The main comments of the IPs are as follows:             <ul style="list-style-type: none"> <li>- Do not include TSS; compliance with BAT-AEL for COD implies sufficient TSS removal (DE, AVEC, ORGALIME).</li> <li>- Do not include TSS; the group of substances covered by TSS is mostly non-toxic or not life-threatening (CZ).</li> <li>- TSS is not mentioned in the E-PRTR (UECBV).</li> <li>- TSS is only relevant as an operating parameter, e.g. for controlling the growth of long chained bacteria. No data available for fishmeal and fish oil production (DK, EUfishmeal).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the EIPPCB proposal.</li> <li>• According to the IPs, TSS is monitored in 11 MS, so there is data available.</li> <li>• The parameter TSS includes both organic and inorganic suspended solids. Suspended particles have potential additional effects on the environment, which are not covered by the parameters COD and TOC.</li> <li>• TSS can typically be abated by a downstream (urban) WWTP and is therefore not relevant for indirect discharges.</li> <li>• Nevertheless, the parameter TSS may be used as a parameter to assess the efficiency of metal and sulphate removal via precipitation and sedimentation.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: to include TSS as a KEI, for direct discharges only. To collect data on TSS for indirect discharges from pig slaughterhouses and rendering installations as contextual information.</li> </ul>

## 3.3.1.3 Total nitrogen (TN)

<b>Original EIPPCB proposal</b>
To include total nitrogen (TN) as a KEI for slaughterhouses and animal by-products installations.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 21 out of 24 IPs agree with the proposal, 1 partly agrees, 1 disagrees and 1 does not provide an answer.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Data on NH<sub>4</sub>-N should be collected additionally, as it may have a potential effect on the consumption of O<sub>2</sub> and is toxic at certain pH values (NH<sub>3</sub>) (DE).</li> <li>- Only NH<sub>4</sub>-N is relevant for waste water from gelatine production (CEFIC).</li> <li>- TN is a KEI, but limited data may be available (UK, EUfishmeal).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the EIPPCB proposal.</li> <li>• According to the IPs, TN is monitored in 12 MS, so there should be data available.</li> <li>• Ammonium-N is covered by the parameter TN. TN is a more pertinent parameter as all forms of organic and inorganic nitrogen can contribute to eutrophication.</li> <li>• The pKa value of ammonium (NH<sub>4</sub><sup>+</sup>) is 9.25. This means that at pH 9.25, 50 % of the ammoniacal nitrogen is in the form of ammonia (NH<sub>3</sub>), at pH 8.25 it is ~10 % and at pH 7.25 it is ~1 %. Given that ammonia (NH<sub>3</sub>) is the toxic species, the toxicity of waste water therefore strongly depends on the local conditions (i.e. the pH value of the receiving water).</li> <li>• The EIPPCB has proposed ammonium nitrogen to be included in the data collection as contextual information (see Section 2.2.2.1.2).</li> <li>• TN can typically be abated by a downstream (urban) WWTP equipped with a nitrification/denitrification stage and is therefore not relevant for indirect discharges.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: to include total nitrogen (TN) as a KEI, for direct discharges only.</li> </ul>

## 3.3.1.4 Total phosphorus (TP)

<b>Original EIPPCB proposal</b>
To include total phosphorus (TP) as a KEI for slaughterhouses and animal by-products installations.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 21 out of 24 IPs agree with the proposal, 1 partly agrees, 1 disagrees and 1 does not provide an answer.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- Phosphate releases are minor and only present in processes using bones as raw material (CEFIC).</li> <li>- Not relevant for all slaughterhouses (CLITRAVI).</li> <li>- BAT-AELs for TP should only apply to plants discharging into a sensitive environment. Some ABP installations only monitor phosphate (EFPRA).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly supports the inclusion of TP as a KEI.</li> <li>• According to the IPs, TP is monitored in 12 MS, so there should be data available.</li> <li>• The parameter total phosphorus includes phosphate. Total phosphorus seems to be a more pertinent parameter as all forms of organically and inorganically bound phosphorus can contribute to eutrophication.</li> <li>• TP can typically be abated by a downstream (urban) WWTP and is therefore not relevant for indirect discharges.</li> </ul>

<ul style="list-style-type: none"> <li>• According to the call for IPs, there are several information sources highlighting the relevance of TP emissions from slaughterhouses and ABP installations.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To change the original EIPPCB proposal as follows: to include total phosphorus (TP) as a KEI, for direct discharges only.</li> </ul>

### 3.3.2 Emissions to air

#### 3.3.2.1 SO<sub>x</sub> and NO<sub>x</sub>

<b>Original EIPPCB proposal</b>			
To include SO <sub>x</sub> and NO <sub>x</sub> as a KEI together with the main sources:			
KEI	IED activity	Type of installation	Process
SO <sub>x</sub> / NO <sub>x</sub>	Animal by-products installations	Rendering	Rendering process
		Incineration of animal by-products	Incineration
<b>Summary of IPs</b>			
<b>Rendering</b>			
<ul style="list-style-type: none"> <li>• 10 out of 24 IPs agree with the proposal for SO<sub>x</sub>, 2 partly agree, 1 disagrees and 11 do not provide answers.</li> <li>• 12 out of 24 IPs agree with the proposal for NO<sub>x</sub>, 2 partly agree and 10 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- SO<sub>x</sub> and/or NO<sub>x</sub> are a KEI for emissions from boilers using animal by-products as fuel (AT, ES, DK, IT, EFPRA).</li> <li>- SO<sub>x</sub> and/or NO<sub>x</sub> are a KEI for emissions from combustion plants that are used to treat odorous waste gases (DE, DK, IT, UK, EFPRA).</li> <li>- SO<sub>x</sub> and NO<sub>x</sub> are relevant for emissions from the treatment of odorous waste gas streams in a biofilter or through thermal oxidation (DK).</li> <li>- SO<sub>x</sub> and NO<sub>x</sub> emissions are monitored when thermal oxidation techniques are used (FR, IT).</li> </ul> </li> </ul>			
<b>Incineration of animal by-products</b>			
<ul style="list-style-type: none"> <li>• 9 out of 24 IPs agree with the proposal for SO<sub>x</sub> and 15 do not provide answers.</li> <li>• 10 out of 24 IPs agree with the proposal for NO<sub>x</sub> and 14 do not provide answers.</li> <li>• The main comments of the IPs are as follows: <ul style="list-style-type: none"> <li>- SO<sub>x</sub> and/or NO<sub>x</sub> are a KEI for emissions from boilers when animal by-products are used as fuel (AT, CZ, ES).</li> <li>- When highly concentrated odorous waste gases are incinerated in thermal oxidisers or regular boilers, or treated in biofilters, NO<sub>x</sub> and/or SO<sub>x</sub> concentrations can be significant (DK).</li> <li>- Permits specify this parameter for routine monitoring (DE, UK, EFPRA).</li> </ul> </li> </ul>			
<b>EIPPCB assessment</b>			
<ul style="list-style-type: none"> <li>• The IPs broadly support the EIPPCB proposal.</li> <li>• The combustion of MBM and fats is proposed to be excluded from the scope, while the incineration of carcasses is proposed to be included in the scope (see Section 2.1.2.4).</li> <li>• Non-condensable gases from the cooking or drying stage are generally characterised by high sulphur and nitrogen contents.</li> <li>• According to the IPs, SO<sub>x</sub> emissions from rendering are monitored in 5 MS; SO<sub>x</sub> emissions from incineration are monitored in 4 MS and the current SA BREF contains a BAT-AEL. NO<sub>x</sub> from rendering is monitored in 5 MS; NO<sub>x</sub> from incineration is</li> </ul>			

monitored in 3 MS and the current SA BREF contains a BAT-AEL. Thus, there may be data available.

- Waste gases from enclosed rendering processes and from incineration are commonly treated with end-of-pipe techniques. SO<sub>x</sub> may be emitted from the outlet of these waste gas treatment techniques.

**EIPPCB proposal**

- To change the original EIPPCB proposal as follows: to include channelled SO<sub>x</sub> and NO<sub>x</sub> emissions as a KEI for rendering and for the incineration of carcasses.

### 3.4 Data collection

#### 3.4.1 Number of SA installations

<b>Original EIPPCB request</b>
Request 12: TWG members are asked to provide the total number of installations permitted for IED activities under points 6.4 (a) and 6.5 of Annex I to the IED in each Member State.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>14 TWG members (13 MS and NO) provided information on the number of installations permitted for IED activities 6.4 (a): 703 slaughterhouses in AT, BE, ES, DK, CZ, FI, FR, IE, NO, PL, PT, SE and UK; 15 slaughterhouses in NO.</li> <li>15 TWG members (13 MS, NO and CEFIC) provided information on the number of installations permitted for IED activity 6.5: 317 ABP installations in AT, BE, DE, DK, ES, CZ, FI, FR, IE, NO, PL, PT, SE; 15 ABP installations in NO.</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>Although the information is not available for all MS, it seems that the total number of installations in the EU is similar to the last IED reporting in 2015, with a few variations by MS.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>No additional proposal compared to Section 2.3.3.</li> </ul>

#### 3.4.2 List of well-performing installations

The experience gained from other BREF reviews has shown that the drawing up of a list of installations that could take part in the data collection via a questionnaire takes time, e.g. due to the need to send requests to operators, waiting for responses, and finally selecting the most suitable installations. For this reason, and in the spirit of front-loading the work, it was therefore recommended that TWG members start the process of preselecting installations for the data collection in advance of the Kick-off Meeting.

<b>Original EIPPCB request</b>
Request 14: TWG members are asked to propose an initial list of well-performing installations for the data collection by filling in Document 3.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>9 TWG members proposed 43 slaughterhouses: AT (12), BE (18), DE (2), ES (13), FI (1), IE (6), UK (18).</li> <li>9 TWG members proposed 43 ABP installations: AT (5), BE (7), CZ (1), DE (10), DK (1), ES (17), FI (1), IE (1), UK (17).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>The selection of installations that will participate in the data collection should take into account the representativeness in terms of subsectors and plant configurations.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>The TWG to complete its proposals of well-performing installations to be included in the data collection (see Section 2.4).</li> </ul>

### 3.4.3 Questionnaire(s) for gathering plant-specific data and information

#### 3.4.3.1 Content and format

The content of the questionnaire(s) for gathering plant-specific data and information are not to be discussed in detail at the KoM, but will be further developed based on the general discussions and agreements taken during the KoM.

<b>Original EIPPCB request</b>
Request 16: The TWG members are invited to provide their initial positions regarding content and format for questionnaires and/or considerations they deem important with regard to drafting the questionnaire templates.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• Take into account recently developed questionnaires (e.g. WGC, TXT BREFs) (BE).</li> <li>• Include only those data and information that are useful for the BREF review (DE).</li> <li>• Include as many fixed predefined values and text as possible (DK).</li> <li>• The physical position of measurement should be clearly defined (DK, EUfishmeal).</li> <li>• Data/information (that influences emissions) to be covered in the questionnaire for slaughterhouses (DK, ES, CLITRAVI, UECBV): <ul style="list-style-type: none"> <li>- type of animal species processed;</li> <li>- degree of plant automation (e.g. manual, mechanised slaughtering, mechanised and automated slaughtering (uses of robotic technology));</li> <li>- hygienic requirements as well as number of production and cleaning shifts;</li> <li>- degree of cleaning and handling of stomachs and casings.</li> </ul> </li> <li>• Data/information (that influences emissions) to be covered in the questionnaires (DK): <ul style="list-style-type: none"> <li>- degree of utilisation of offal and by-products in slaughterhouses;</li> <li>- type of product transport media (crates, boxes, etc.);</li> <li>- description of abatement techniques and related efficiencies;</li> <li>- number and types of FDM activities associated with slaughterhouses (AT, DK);</li> <li>- different sources of water (e.g. fresh water, seawater) (DK, EUfishmeal);</li> <li>- types of waste water discharge (DK, EUfishmeal).</li> </ul> </li> <li>• Include information on (SE): <ul style="list-style-type: none"> <li>- examples of process optimisation for energy, water, chemical use and waste;</li> <li>- the type of processes on site;</li> <li>- detailed questions about every single BAT candidate in the current SA BREF;</li> <li>- substitution of detergents and other relevant chemicals.</li> </ul> </li> <li>• Include information on (UK): <ul style="list-style-type: none"> <li>- odour emissions as well as on control and abatement techniques for all relevant KEIs;</li> <li>- floor area dedicated for processing;</li> <li>- type of animal species processed;</li> <li>- degree of processing of products and co-products.</li> </ul> </li> <li>• Take into account the example questionnaire produced by EFPRA for the ABP sector (EFPRA).</li> <li>• Take into consideration that data from fishmeal and fish oil production includes seasonal and yearly variability (EUfishmeal).</li> <li>• Differentiate between fresh meat and frozen meat produced; differentiate between the energy required to heat and cool the building and the energy to heat and cool the product (ORGALIME).</li> <li>• Collect information on the environmental impact of slaughter techniques (UECBV).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The questionnaire development follows four stages: draft preparation, discussion, testing and finalisation (or even more iterations if needed). Based on the TWG's decision, and to facilitate the discussion on questionnaire development, a dedicated TWG workshop may be organised to discuss the questionnaire.</li> <li>• Data and contextual information on KEIs concluded on at the KoM will be specified</li> </ul>



<p>during the process of the questionnaire development and requested via the questionnaire.</p> <ul style="list-style-type: none"> <li>Improvements on recently developed questionnaires for other BREFs (e.g. TXT BREF) will be taken into account.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>No additional proposal compared to Section 2.3.3.</li> </ul>

### 3.4.3.2 Data at process level

<b>Original EIPPCB request</b>
<p>Request 17: The TWG members are invited to provide their initial positions on collecting data at process level with a view to evaluating the environmental performance of this process. In particular:</p> <ul style="list-style-type: none"> <li>is monitoring carried out at process level (for instance scalding, chilling)?</li> <li>for which parameter? (e.g. consumption of energy, water, raw materials, carcass produced, animal by-product treated, etc.)</li> <li>for which processes?</li> </ul>
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>Collect data on total energy and water consumption, total amount of raw materials used, total amount of carcasses produced, and amount of animal by-products per category (1, 2 and/or 3) (BE).</li> <li>There are ABP installations that undertake sub-metering of energy, steam and water consumption across different stages of their processes for management control (DE, EFPPA).</li> <li>Data on water and energy consumption are not generally available at individual process level. Data should be collected on the type of specific processes implemented in a slaughterhouse (ES, CLITRAVI, UECBV).</li> <li>Data at process level is not consistently available; it should be collected at an aggregated level (DK, EUfishmeal).</li> <li>Collect data on blood collection efficiency and water consumption per process floor surface area (UK).</li> <li>No representative data available at process level except water and energy consumption for waste water treatment (AVEC).</li> <li>Data are not comparable between different installations of gelatine manufacturing, because raw materials, type of gelatine, application and type of delivery are different (CEFIC).</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>Data from specific processes can be collected only from SA installations that apply systematic monitoring (metering) of inputs and outputs at process level.</li> <li>According to the IPs, it is not clear which specific processes in slaughterhouses are commonly monitored (e.g. for water and energy consumption) at process level. It seems that monitoring at process level is more common for ABP installations.</li> <li>Data and contextual information on KEIs concluded at the KoM for specific processes (see Sections 2.2.4 and 0) will be specified during the process of the questionnaire development and requested via the questionnaire.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>No additional proposal compared to Sections 2.2.4 and 0.</li> </ul>

### 3.5 Techniques to consider in the determination of BAT and emerging techniques

#### 3.5.1 Existing techniques

##### 3.5.1.1 BAT candidates and emerging techniques in the current SA BREF

<p><b>Original EIPPCB request</b></p> <p>Request 18: TWG members are asked to evaluate the ‘Techniques to consider in the determination of BAT’ and the ‘Emerging techniques’ in the current SA BREF and to indicate:</p> <ul style="list-style-type: none"> <li>• any obsolete techniques, i.e. that are no longer used;</li> <li>• which techniques are considered to be the most important;</li> <li>• which techniques require updating (and which part of the information, e.g. description, emission/consumption levels, applicability, economics);</li> <li>• what information can be provided;</li> <li>• any emerging techniques which could now be considered BAT candidates.</li> </ul>
<p><b>Summary of IPs</b></p> <p>The techniques considered obsolete by at least two IPs are the following:</p> <p><b><u>General BAT candidates</u></b></p> <ul style="list-style-type: none"> <li>• Use of binary ice as a cooling fluid (secondary refrigerant) (DK, IE, CLITRAVI, EUfishmeal).</li> <li>• Transport blood in insulated containers (DE, EUfishmeal).</li> <li>• Replacement of boiler fuel with tallow (AVEC, CEFIC, EUfishmeal).</li> <li>• Provision of a waste water holding capacity in excess of routine requirements (AT, ES).</li> <li>• Minimise liquid seepage and cover waste water treatment tanks (CZ, EUfishmeal).</li> </ul> <p><b><u>Slaughterhouses BAT candidates</u></b></p> <ul style="list-style-type: none"> <li>• Avoid and minimise carcass rinsing, combined with using clean slaughter techniques (DK, IE, CLITRAVI).</li> <li>• Use pressurised water to wash the carcass (DK, ES, IE, CLITRAVI).</li> <li>• Addition of dry bedding to existing bedding, to soak up manure (DK, ES, IE, SE CLITRAVI).</li> <li>• Condensation/steam scalding of pigs (vertical scalding) (ES, IE, CLITRAVI).</li> <li>• Removal of chopping blades from a by-product washer (IE, UK, CLITRAVI).</li> <li>• Preservation of hides and skins by cooling with flaked or crushed ice (DE, DK, IE, ES, CLITRAVI).</li> <li>• Steam scalding of poultry (DE, ORGALIME).</li> <li>• Water efficient and fewer shower heads (DE, ORGALIME).</li> <li>• Use of detergents using enzymes (DE, ORGALIME).</li> <li>• Segregated storage and handling of different kinds of by-products (ES, IE, CLITRAVI).</li> </ul> <p><b><u>ABP BAT candidates</u></b></p> <ul style="list-style-type: none"> <li>• Maintenance of negative pressure in storage, handling and processing areas (IE, EUfishmeal).</li> <li>• Use of fresh refrigerated raw materials (IE, EUfishmeal).</li> <li>• Chlorine dioxide scrubber generated from sodium chlorite - odour abatement (DE, UK, EFPPRA).</li> <li>• Use of fresh low total volatile nitrogen (TVN) feedstock (IE, EUfishmeal).</li> </ul>
<p><b>EIPPCB assessment</b></p> <ul style="list-style-type: none"> <li>• The information provided will be taken into account for the drawing up of the draft SA BREF.</li> </ul>
<p><b>EIPPCB proposal</b></p> <ul style="list-style-type: none"> <li>• To take into account the information provided for the drafting of the revised SA BREF.</li> </ul>

3.5.1.2 Information on techniques to increase energy efficiency

<b>Original EIPPCB proposal</b>
Proposal 18: The EIPPCB proposes to collect information on techniques to increase energy efficiency which are SA sector-specific, 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.
<b>Summary of IPs</b>
<ul style="list-style-type: none"> <li>• 18 out of 24 IPs agree with the proposal, 2 partly agree and 4 do not provide answers.</li> <li>• The main comment of the IPs is as follows:             <ul style="list-style-type: none"> <li>- As long as the review of the ENE and ICS BREFs is not decided by the Article 13 Forum, there should be no reference to them (DE, SE).</li> </ul> </li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• The TWG broadly agrees with the EIPPCB proposal.</li> <li>• BAT conclusions can include provisions for general techniques to increase energy efficiency (included in the ENE or ICS BREFs). Duplication of valid information should be avoided.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• To keep the original EIPPCB proposal unchanged: to collect information on techniques to increase energy efficiency which are SA sector-specific, 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.</li> </ul>

### 3.5.2 Additional techniques

#### 3.5.2.1 Additional techniques proposed by the TWG

<b>Original EIPPCB request</b>
Request 19: TWG members are asked to propose any additional technique (not included in the current SA BREF) that could be considered as a BAT candidate or emerging technique.
<b>Summary of IPs</b>
<p>The following techniques have been proposed in the IPs as additional BAT candidates:</p> <ul style="list-style-type: none"> <li>• Ozonation for disinfection (DE).</li> <li>• Partial nitrification-Anaerobic ammonium oxidation (DE).</li> <li>• Waterbath stunning (DE, AVEC).</li> <li>• Air-Spray chilling (DE, AVEC).</li> <li>• Combi-chilling (DE, AVEC).</li> <li>• Land spreading of anaerobic digestion residue (ES, CLITRAVI).</li> <li>• Gas stunning (AVEC).</li> <li>• Use of ionised air for odour abatement of building air (EFPRA).</li> <li>• Energy recovery from condensation (EFPRA).</li> <li>• Bio-trickling filter for odour abatement of building air (EFPRA).</li> <li>• Jet stream scalding of poultry (ORGALIME).</li> <li>• Undine water spraying solutions (ORGALIME).</li> </ul> <p><u>For fishmeal and fish oil production (DK, EUfishmeal):</u></p> <ul style="list-style-type: none"> <li>• Burning malodorous gases, including non-condensable gases, in an existing boiler.</li> <li>• Filter seawater before use in scrubbers to avoid fouling of nozzles and media in scrubbers.</li> <li>• Seawater scrubbing of milling and cooling air to reduce odour.</li> </ul>
<b>EIPPCB assessment</b>
<ul style="list-style-type: none"> <li>• TWG should provide information (in case of not having it done already) on the proposed techniques to be considered BAT candidates using the standard 10-heading template of the BREF Guidance.</li> <li>• The information provided will be taken into account for the derivation of the draft SA BREF.</li> <li>• The European Commission is currently implementing an external ‘innovation observatory’ for the SA BREF review. This project is in contact with the main EU stakeholders playing a role in the field of technological innovation. This study should highlight a number of emerging techniques, which will be taken into account for the SA BREF review in due course. The study is expected to be available tentatively by the end of June 2019.</li> </ul>
<b>EIPPCB proposal</b>
<ul style="list-style-type: none"> <li>• TWG to provide information on additional techniques using the standard 10-heading template of the BREF Guidance (in the event that they have not already done it).</li> <li>• To take into account the information provided from the TWG and from the ‘innovation observatory’ for the drafting of the revised SA BREF.</li> </ul>

## 3.5.2.2 Techniques included in Section 7.7 of the current SA BREF

<p><b>Original EIPPCB request</b></p> <p>Request 20: TWG members are asked to evaluate the techniques included in the Section 7.7 (<i>Techniques not included in Chapter 4, “Techniques to consider in the determination of BAT”, due to lack of sufficient information</i>) of the SA BREF and to indicate:</p> <ul style="list-style-type: none"> <li>• which techniques may be considered as BAT candidates in the BREF review;</li> <li>• what information can be provided.</li> </ul>
<p><b>Summary of IPs</b></p> <p>The techniques considered BAT candidates by at least three IPs are the following:</p> <p><b><u>General techniques applicable in slaughterhouses and animal by-product installations</u></b></p> <ul style="list-style-type: none"> <li>• Fat cleaning (ES, IE, CEFIC).</li> <li>• Conductivity controlled blowdown on cooling towers (DE, DK, ES, AVEC, CEFIC, EFPRA).</li> <li>• Design of refrigeration space to minimise energy consumption (AT, DK, ES, IE, CEFIC, ORGALIME).</li> <li>• Energy-saving motors (AT, DE, DK, ES, IE, AVEC, EFPRA, EUfishmeal, ORGALIME).</li> <li>• Heat recovery (AT, DE, DK, ES, IE, CEFIC, EFPRA, EUfishmeal).</li> <li>• Airlock provision between the indoor loading/unloading area and outdoors (AT, DK, ES, EFPRA, ORGALIME).</li> <li>• Heat recovery from tank water (AT, DK, ES).</li> <li>• Separation of metals (DE, DK, EFPRA).</li> </ul> <p><b><u>General techniques applicable in slaughterhouses</u></b></p> <ul style="list-style-type: none"> <li>• Control of the water supply to de-hairing machines (AT, DE, DK, ES, IE).</li> <li>• Efficient use and design of singe pipes (AT, DE, ES).</li> <li>• Install switches which initiate the singeing flame only when a carcass is present (AT, DE, DK, ES, IE).</li> <li>• Insulate the singeing oven (AT, ES, IE, ORGALIME).</li> <li>• Use of fat separators (AT, DE, ES).</li> <li>• Optimise the use of the carcass splitting saw (AT, DE, ES).</li> <li>• Water control at rumen washing machine (AT, DE, ES).</li> <li>• Dry removal of gut manure (DE, DK, ES, IE).</li> <li>• Control of water supply by e.g. department or unit operation (AT, DK, ES, AVEC, EFPRA, ORGALIME).</li> <li>• Air-cooling of vacuum pumps instead of water-cooling (DE, DK, AVEC, ORGALIME).</li> <li>• Automatic magnetic valve-controlled water sprays (AT, DE, DK, ES, ORGALIME).</li> <li>• Recuperation/recovery of energy (AT, DK, ES, IE).</li> </ul> <p><b><u>Slaughter of large animals</u></b></p> <ul style="list-style-type: none"> <li>• Carbon dioxide stunning of pigs (AT, DE, ES).</li> <li>• Design of pig scalding tank, to ease emptying and cleaning (AT, DK, ES).</li> <li>• Reducing water carried out of scalding tanks (AT, DK, ES, IE).</li> </ul> <p><b><u>Slaughter of poultry</u></b></p> <ul style="list-style-type: none"> <li>• Multi-stage crate washing units (AT, DE, DK, ES, IE, AVEC, ORGALIME).</li> <li>• Collection of materials screened off crate washing machines (AT, DE, DK, IE, AVEC, ORGALIME).</li> <li>• Limitation of water loss from the scalding tank (AT, DK, ES, ORGALIME).</li> <li>• Transport of heads and feet using a vacuum system (AT, DK, ES, ORGALIME).</li> <li>• Reduced water flow in mini-chiller (AT, ES, ORGALIME).</li> <li>• High-pressure cleaning (AT, DK, ORGALIME).</li> <li>• Monitor contamination removal (AT, DK, ES).</li> </ul>

**Rendering**

- Recirculation of solid residues from pre-treatment into the raw material (if there is no feed production) (AT, DK, EFPRA).
- Air-cooling of condensate, instead of water-cooling (AT, DE, AVEC, EFPRA).
- Cover all tanks to enable air treatment (AT, DE, DK, EFPRA).
- Enclosure of WWTP balance tanks and ducting air stream to odour treatment (AT, DE, DK, EFPRA).
- Neutralisation tanks (AT, DK, CEFIC).

**Fishmeal and fish oil production**

- Controlled cooking - preventing over-boiling (AT, DK, IE, EUfishmeal).
- Control of suction on the dryer (AT, DK, IE, EUfishmeal).

**EIPPCB assessment**

- TWG should provide information on the techniques to be considered BAT candidates using the 10-heading template.
- The information provided will be taken into account for the derivation of the draft SA BREF.

**EIPPCB proposal**

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