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Seville, 14 May 2018

KICK-OFF MEETING

FOR THE DRAWING UP OF THE

BEST AVAILABLE TECHNIQUES (BAT) REFERENCE DOCUMENT FOR

COMMON WASTE GAS TREATMENT IN THE CHEMICAL SECTOR

SEVILLE, 25 – 29 September 2017

and INTERIM MEETING, SEVILLE 14 – 15 March 2018

MEETING REPORT

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Acronyms used in this Report

General acronyms – Definitions

Acronym	Meaning
BAT	Best Available Techniques (as defined in Article 3(10) of the IED)
BAT-AEL	BAT-associated emission level (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
BREF	BAT reference document (as defined in Article 3(11) of the IED)
BREF Guidance	Commission Implementing Decision 2012/119/EU laying down rules concerning guidance on the collection of data and on the drawing up of BAT reference documents and on their quality assurance
BP	Background Paper (used to focus the discussions at the Kick-off Meeting)
CAK BREF	BAT reference document for the Production of Chlor-alkali
CFCs	Chlorofluorocarbons
CMR	Carcinogenic, mutagenic or toxic to reproduction
CWW BREF	BAT reference document for Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector
DG ENV	Directorate-General for Environment of the European Commission
ECHA	European Chemicals Agency
EDC	Ethylene dichloride
EFS BREF	BAT reference document on Emissions from Storage
EFTA	European Free Trade Association
EIPPCB	European IPPC Bureau within Directorate B of the Commission's Joint Research Centre
EN	European Standard adopted by CEN (European Committee for Standardisation, from its French name Comité Européen de Normalisation)
EO	Ethylene oxide
E-PRTR	European Pollutant Release and Transfer Register
ETS	Emission trading scheme
EU	European Union
HCB	Hexachlorobenzene
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
ICS BREF	BAT reference document on Industrial Cooling Systems
IED	Industrial Emissions Directive (2010/75/EU)
IM	Interim Meeting of WGC BREF TWG, Seville 14-15 March 2018
IP(s)	Initial position(s)
IPPC Directive	Integrated Pollution Prevention and Control Directive 2008/1/EC (repealed and replaced by the IED)
IS BREF	BREF for Iron and Steel Production
ISO	International Organisation for Standardisation. Also international standard adopted by this organisation
I-TEQ	International toxic equivalent
KEI(s)	Key environmental issue(s)
KoM	Kick-off Meeting
LCP BREF	BAT reference document for Large Combustion Plants
LVIC-AAF BREF	BAT reference document for the Manufacture of Large Volume Inorganic Chemicals – Ammonia, Acids and Fertilisers
LVIC-S BREF	BAT reference document for the Manufacture of Large Volume Inorganic Chemicals – Solids and Others Industry
LVOC BREF	BAT reference document for the Large Volume Organic Chemical Industry
MCP Directive	Medium Combustion Plants Directive (2015/2193/EU)
MS(s)	Member State(s)

NMVOC	Non-methane volatile organic compound
NO_X	The sum of nitrogen monoxide (NO) and nitrogen dioxide (NO_2), expressed as NO_2
ODS	Ozone-depleting substance
OFC BREF	BAT reference document for the Manufacture of Organic Fine Chemicals
PAH	Polycyclic aromatic hydrocarbon
PCDD/F	Polychlorinated dibenzo-*p*-dioxin/furan
PFCs	Perfluorocarbons
PM	Particulate matter
$PM_{2.5}$	Particulate matter which passes through a size-selective inlet with a 50 % efficiency cut-off at 2.5 µm aerodynamic diameter as defined in Directive 2008/50/EC
PM_{10}	Particulate matter which passes through a size-selective inlet with a 50 % efficiency cut-off at 10 µm aerodynamic diameter as defined in Directive 2008/50/EC
POL BREF	BAT reference document in the Production of Polymers
POP regulation	Regulation (EC) No 850/2004 on Persistent Organic Pollutants
PVC	Polyvinyl chloride
REACH	Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals, administered by the ECHA
REF BREF	BAT reference document for the Refining of Mineral Oil and Gas
ROM	JRC Reference Report on Monitoring of emissions to air and water from IED installations
SA BREF	Reference Document on Best Available Techniques in the Slaughterhouses and Animal By-products Industries
SO_X	The sum of sulphur dioxide (SO_2), sulphur trioxide (SO_3), and sulphuric acid aerosols, expressed as SO_2
SVHC	Substance of very high concern
TVOC	Total volatile organic carbon
TWG	Technical Working Group
TXT BREF	Reference Document on Best Available Techniques for the Textiles Industry
UBA(DE)	Umweltbundesamt (German Federal Environment Agency)
VCI	Verband der Chemischen Industrie (German chemical industry association)
VCM	Vinyl chloride monomer
VOC	Volatile organic compound (as defined in Article 3(45) of the IED)
WI BREF	BAT reference document on Waste Incineration
WGC BREF	BAT reference document for Common Waste Gas Treatment in the Chemical Sector
WHO	World Health Organization
WHO-TEQ	WHO toxic equivalent

Member States and Organisations (participants in the Kick-off Meeting and/or the Interim Meeting)

Code	Member states and organisations	Attended the KoM	Attended the IM
AT	Austria	Yes	Yes
BE	Belgium	Yes	Yes
CZ	Czech Republic	Yes	Yes
DE	Germany	Yes	Yes
DK	Denmark	Yes	Yes
ES	Spain	Yes	Yes
FI	Finland	Yes	No
FR	France	Yes	Yes
HR	Croatia	Yes	No
IE	Ireland	Yes	Yes
IT	Italy	Yes	Yes
NO	Norway	Yes	No
NL	Netherlands	Yes	Yes
PL	Poland	Yes	Yes
PT	Portugal	Yes	Yes
SE	Sweden	Yes	Yes
SK	Slovakia	Yes	Yes
UK	United Kingdom	Yes	Yes
ACCESSA	Association for the Catalytic Control of Emissions from Stationary Sources to Air	Yes	No
CEFIC	European Chemical Industry Council	Yes	Yes
EEB	European Environmental Bureau	Yes	Yes
EUROALLIAGES	Association of European Ferro-alloy producers	Yes	No
EUROFER	European Steel Association	Yes	No
EUROMETAUX	European Non-ferrous Metals Association	Yes	Yes
Fertilizers Europe	Association representing the major fertiliser manufacturers in Europe	Yes	Yes
Fuels Europe	Association representing the major refinery operators in Europe	Yes	Yes
FETSA	Federation of European Tank Storage Associations	Yes	No
ORGALIME	European Engineering Industries Association	Yes	Yes

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1 INTRODUCTION

1.1 Kick-off Meeting and Interim Meeting for the drawing up of the WGC BREF

The Technical Working Group (TWG) for the drawing up of the Reference Document on Best Available Techniques (BAT) for Common Waste Gas Treatment in the Chemical Sector (WGC BREF) held its first plenary meeting (also referred to as the Kick-off Meeting or KoM) at the JRC premises in Seville, Spain, on 25 - 29 September 2017. During the KoM, the TWG discussed the scope of the WGC BREF and whether to include sulphuric acid production. They decided to refer the matter to the IED Article 13 Forum. This was discussed at the 11th IED Article 13 Forum meeting, held in Brussels on 19 – 20 December 2017 and a decision was taken that in addition to the WGC BREF there will be a BREF on Large Volume Inorganic Chemicals (LVIC BREF). The forum decision meant that further discussion was needed to clarify the scope of the WGC BREF so the TWG held a second plenary meeting (also referred to as the Interim Meeting or IM) at the JRC premises in Seville, Spain, on 14 – 15 March 2018, at which the scope of the WGC BREF was finalised.

This report is a summary of the first and second TWG meetings (i.e. KoM and IM). All presentations delivered at the meetings are available to TWG members on the BAT Information System (BATIS) workspace together with the conclusion slides of the meetings.

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

The drawing up of the WGC BREF started with the activation of the TWG in September 2016. The WGC TWG is made up of more than 170 experts representing EU Member States (MSs), industry, environmental non-governmental organisations (environmental NGOs) and the European Commission.

The call for the expression of TWG members' initial positions for the drawing up of the WGC BREF was sent out by the European IPPC Bureau (EIPPCB) on 20 January 2017, with a deadline for responses of 10 March 2017. Responses were received from 15 Member States, 1 EFTA country, 8 industry organisations and 1 environmental NGO.

The TWG Kick-off Meeting (KoM)

In order to facilitate the discussions at the Kick-off Meeting, a Background Paper (BP) highlighting the items to be discussed was prepared by the EIPPCB and sent to the WGC TWG members 10 weeks in advance of the meeting, on 14 July 2017. The term 'EIPPCB KoM proposal' used in the present document refers to the way forward that the EIPPCB proposed to the TWG in the BP after taking into account the TWG members' 'initial positions'. The Kick-off Meeting was attended by almost 90 TWG members (40 from MS, 39 from industry, 2 from environmental NGOs and 8 from the European Commission).

The meeting started on Monday 25 September 2017 at midday and finished on Friday 29 September 2017 at midday (i.e. three full days and two half days). The meeting agenda included presentations and discussions on the exchange of information for the drawing up of the WGC BREF (as provided for in Article 13 of Directive 2010/75/EU). On the final morning, the draft agreed conclusions of the meeting and the next steps of the process were presented and refined with the participants.

The head of the EIPPCB and two EIPPCB staff members alternated to chair the meeting and the WGC BREF co-authors (the WGC BREF team of the EIPPCB) introduced each topic and led the technical discussions.

During the meeting, discussions were held on the TWG members' initial positions and on the EIPPCB KoM proposals that were based on those initial positions. The key issues for which agreements were sought at the meeting were the scope of the future WGC BREF, the interface with other BREF documents or EU Directives, the structure of the WGC BREF, the key environmental issues (KEIs), the data collection and the techniques to consider in the determination of BAT.

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

This document presents the main issues discussed for each item and the conclusions reached at the Kick-off Meeting by the TWG. Under some items, it is indicated that a task was assigned to the TWG in connection with the item.

The 11th IED Article 13 Forum meeting

At the KoM the TWG discussed the scope of the WGC BREF and whether to include sulphuric acid production. They decided to make the following recommendation to the IED Article 13 Forum:

- The TWG for the drawing up of the WGC BREF recommends to the IED Article 13 Forum that the production of sulphuric acid should be excluded from the scope of the WGC BREF and instead be dealt with as part of a review of the LVIC BREFs because of concerns about the consequences on the workload, the risk of not tackling non-air-related KEIs, overall quality, ambition level and the need for a process-integrated approach.

That specific recommendation and the wider issue of the future of the chemical BREFs were discussed at the 11th IED Article 13 Forum meeting, held in Brussels on 19 – 20 December 2017. At this meeting, there was a decision that:

- In addition to the WGC BREF there will be a BREF on Large Volume Inorganic Chemicals (LVIC BREF). These two BREFs will close the current work programme on the chemical BREFs and any remaining gaps could be covered by the next BREF review cycle.

The TWG Interim Meeting (IM)

The decision at the 11th IED Article 13 Forum meeting was that there should be both a WGC BREF and an LVIC BREF. However the Forum did not specify which processes should be covered by which BREF. The EIPPCB therefore organised the Interim Meeting so that the TWG could finalise the scope of the WGC BREF. This meeting also provided an opportunity for the TWG to review progress on and discuss the development of a questionnaire for the WGC BREF data collection.

In order to facilitate the discussions at the IM, a paper proposing the processes to be included in or excluded from the scope of the WGC BREF was prepared by the EIPPCB and sent to the WGC TWG members three weeks in advance of the meeting, on 21 February 2018. The term 'EIPPCB IM proposal' used in the present document refers to the way forward that the

EIPPCB proposed to the TWG in the IM paper issued on 21 February 2018. A first draft of the data collection questionnaire was posted onto BATIS a few days before the meeting. The Interim Meeting was attended by almost 60 TWG members (32 from MS, 15 from industry, 1 from an environmental NGO and 7 from the European Commission).

The meeting started on Wednesday 14 March 2018 and finished on Thursday 15 March 2018 (i.e. two full days). The first day was spent finalising the scope of the WGC BREF and the second day discussing the data collection. In the final session of the second day, the draft agreed conclusions of the meeting and the next steps of the process were presented and refined with the participants.

The head of the EIPPCB and an EIPPCB staff member chaired the first and second days of the meeting respectively and the WGC BREF co-authors (the WGC BREF team of the EIPPCB) introduced each topic and led the technical discussions.

During the first day of the meeting, discussions were held on the EIPPCB IM proposals and the feedback submitted by TWG members before the meeting. The key issue for which agreements were sought at the meeting was finalising the scope of the future WGC BREF. The EIPPCB IM proposals were to exclude a number of processes from the scope of the WGC BREF. The expectation is that these processes will be included in the scope of the LVIC BREF, but at the moment no decision on the scope of the future LVIC BREF has been taken, as this will be the task of the future LVIC BREF TWG at a later date.

The items were discussed following a common pattern. The EIPPCB gave a presentation based on the IM paper they had issued on 21 February 2018, for each issue and proposed a way forward. The participants then had the opportunity to discuss each issue and to ultimately reach a conclusion by consensus.

During the second day of the meeting, the EIPPCB presented the first draft of the data collection questionnaire and gathered comments from the TWG.

This document presents the main issues discussed for each item and the conclusions reached at the Interim Meeting by the TWG. Under some items, it is indicated that a task was assigned to the TWG in connection with the item.

1.2 Introductory presentations at the Kick-off Meeting

The presentation given by a representative of the Directorate-General for Environment of the European Commission (DG ENV) recalled the overall context and legal framework as well as the agreement to focus the information exchange so that BAT conclusions are developed or updated for the key environmental issues (KEIs). The presentation recalled in particular the four criteria put forward by DG ENV to identify KEIs.

The state of play of the work programme for the review of the chemical BREFs was reported. The presentation also outlined the principles of targeted efforts, transparency, efficiency, and to conclude generic BAT if possible. The work for drawing up the WGC BREF will include:

- collecting comprehensive and representative information and data on abatement techniques and emissions levels across the whole chemical industry;
- collecting information and data from specific products/processes that may require a dedicated approach;
- thorough analysis of information and data;
- the definition of generic BAT and BAT-AELs for emissions to air for the whole chemical industry while identifying (subsectors/products/)processes requiring specific consideration.

Finally, the presentation recalled the decision that the review of the other chemical BREFs will be postponed until the work on the WGC BREF has progressed sufficiently. The future of the other chemical BREFs will be discussed in the next IED Article 13 Forum meeting scheduled in December 2017. FR briefly presented the main points of the DE-FR joint paper, which was submitted to the TWG in June 2017 and the aim of which was to facilitate the discussion on the scope of the WGC BREF.

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

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

2 SCOPE (ISSUES COVERED IN THE KICK-OFF MEETING)

2.1 Overview

2.1.1 Introduction

The scope proposed by the EIPPCB in the BP was determined by considering:

- the decisions already taken at the level of the IED Article 13 Forum on the work programme for the review of the chemical BREFs;
- the anticipated interactions with the series of chemical BREFs and other BREFs (both 'horizontal' and 'vertical' ones);
- which of the chemicals production activities listed in Section 4 of Annex I to the IED should be included/excluded; and
- whether any chemical subsectors, products or processes require further specific consideration (see Section 2.3.2).

In the BP, the EIPPCB had proposed that all IED chemical installations should be included in the scope of the WGC BREF, unless they were excluded by another proposal. In their IPs, the TWG members broadly agreed with the proposal. Referring to the DE-FR joint paper, several TWG members expressed their concern that aiming at too wide a scope might compromise the manageability of the data collection and lead to the derivation of BAT-AELs that are too generic. One MS asked for clarification as regards the interactions between the WGC BREF and the not-yet-revised chemical BREFs that are still applicable and used to set permit conditions.

After considering all the arguments, the TWG decided:

- To cover all chemical installations falling under the scope of the IED in the scope of the WGC BREF (unless specifically excluded by other decisions).

  However, depending on the decisions taken by the TWG on KEIs as well as on the quality, quantity and effective extent (i.e. in terms of chemical subsectors/products/processes) of the data and information collected, the scope coverage might be more restricted with any change made at the earliest opportunity.

2.1.2 Channelled emissions to air

In the BP, the EIPPCB had proposed to include channelled emissions to air in the scope of the WGC BREF. The TWG broadly agreed with the proposal and added a few points of clarification.

Conclusions reached by the TWG:

- To include channelled emissions to air in the scope of the WGC BREF except for those processes for which BAT-AEPLs have already been set during the review of the LVOC BREF, unless the LVOC TWG recommended that the WGC BREF should address specific issues (e.g. NO_X emissions from thermal oxidisers). This includes covering in the WGC scope emissions from individual and combined waste gas streams.

2.1.3 Diffuse emissions to air

In the BP, the EIPPCB had proposed to exclude diffuse emissions to air from the scope of the WGC BREF. The main issues raised during the TWG discussions were as follows:

- FR referred to their paper on diffuse emissions (available on BATIS) which presented data from the 10 plants with the highest contributions to NMVOC emissions in FR. This showed that the majority of the emissions of NMVOC and CMR substances occur as diffuse emissions. FR therefore proposed to include diffuse emissions to air in the scope of the WGC BREF and to update the techniques described in the CWW BREF. This view was supported by most MSs and the environmental NGO.
- Several MSs offered to provide data on diffuse emissions. One MS proposed that diffuse emissions of ammonia from soda ash plants should also be included.
- The chemical industry did not support the inclusion of diffuse emissions in the scope of the WGC BREF. Their view is that the reduction of diffuse emissions is important; however, diffuse emissions are difficult to quantify. Additionally, data obtained using different monitoring methods might vary by orders of magnitude and therefore it would be difficult to conclude on BAT-AELs. The BAT described in the CWW BREF should be used to reduce VOC emissions. Monitoring of workers' health showed that levels of CMR substances were consistently below the workplace exposure levels. This view was supported by most other industry organisations and one MS.

The EIPPCB recognised that the TWG was divided in its views on the inclusion of diffuse emissions, as it had been in the responses to the call for initial positions. Given that FR had already supplied data and that other MSs informed that they could do the same, the EIPPCB proposed that diffuse emissions should be included in the scope of the WGC BREF and this was agreed by the TWG.

For consistency with the conclusions taken on the interface with the EFS BREF (see Section 2.2.2) the TWG decided to amend the proposal in order to include emissions from the storage, transfer and handling of materials where these are directly associated with the chemical production process.

After considering all the arguments, the TWG decided:

- ➢ To include diffuse emissions to air from processes in the scope of the WGC BREF, including emissions from the storage, transfer and handling of materials where these are directly associated with the chemical production process.

Information to be provided by:

- ➢ BE, DE, FR, IT, SE and CEFIC.

2.1.4 Emissions of noise and odour

In the BP, the EIPPCB had proposed that emissions of noise and odour should be excluded from the scope of the WGC BREF and that this should not be discussed at the meeting because the TWG IPs showed broad support for the proposal. Prior to the meeting, the environmental NGO had asked for the subject to be discussed so it was put on the agenda. However, the environmental NGO withdrew its request at a later stage of the meeting after the TWG had agreed to include diffuse emissions and to consider H_2S as a KEI. Therefore, the EIPPCB KoM proposal was unchanged.

Conclusions reached by the TWG:

- To exclude emissions of noise and odour from the scope of the WGC BREF.

2.2 BAT on emissions to air in other relevant documents

2.2.1 CAK BREF

In the BP, the EIPPCB had proposed that activities included in the scope of the CAK BREF should be excluded from the scope of the WGC BREF. The TWG agreed with the proposal without further discussion at the KoM.

Conclusions reached by the TWG:

- To exclude those activities that are included in the scope of the CAK BREF from the scope of the WGC BREF.

2.2.2 EFS BREF

In the BP, the EIPPCB had proposed to exclude emissions from storage from the scope of the WGC BREF, except when emissions from storage and emissions from the process are handled in a combined waste gas treatment system and the pollutant load from storage is minor compared to the pollutant load from the process.

The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO suggested to include emissions from storage in the scope of the WGC BREF because:
  - this TWG had already decided to include diffuse emissions and it would be impossible to differentiate between diffuse emissions from storage and diffuse emissions from process sources;
  - the TWG for the LVOC BREF recommended to consider addressing the emissions from storage specific to LVOC and other chemical sectors in the WGC BREF;
  - the review of the EFS BREF is not scheduled in the work programme yet.
- However, several other MSs were in favour of the EIPPCB KoM proposal.
- One MS proposed to amend the wording for combined waste gas treatment systems to remove the requirement for the pollutant load from storage to be minor compared to the pollutant load from the process. This was supported by one industry organisation.
- One industry organisation stated that if specific provisions were made on product handling and storage in the chemical sector, this would create a distortion between the chemical plants that have on-site integrated storage and those who use the services of an external storage company.
- Several industry organisations argued that:
  - storage should be excluded because it is not an IED activity and, while some storage is located on production sites, there are also stand-alone storage sites; if emissions from storage are included in the WGC BREF, they should be limited to IED chemical installations and exclude third-party-owned facilities.
  - storage is a generic topic and since emissions are already covered in the EFS BREF they should not be included in the WGC BREF.

After considering all the arguments, the TWG decided:

- To include emissions from the storage, transfer and handling of materials only where these are directly associated with the chemical production process. To include the combined treatment of waste gases in those cases where a share of the pollutant load originates from the storage, transfer and handling of materials.

2.2.3 LCP BREF and MCP Directive

2.2.3.1 Overview

In the BP, the EIPPCB had proposed the following:

- To exclude from the scope of the WGC BREF emissions from combustion plants covered by the LCP BREF, the MCP Directive or the REF BREF.
- To exclude from the scope of the WGC BREF combustion plants with a total rated thermal input below 1 MW.
- To include in the scope of the WGC BREF emissions from process furnaces/heaters used in the chemical industry with a total rated thermal input equal to or greater than 1 MW, with the exception of the process furnaces/heaters used in lower olefins and ethylene dichloride crackers, which are covered by the LVOC BREF.

The EIPPCB KoM proposals were generally broadly supported by the TWG IPs. Only minor editorial changes were made after a short discussion (see Sections 2.2.3.2 and 2.2.3.3).

According to the IED, 'combustion plant' means any technical apparatus in which fuels are oxidised in order to use the heat thus generated. Article 28 of the IED stipulates that reactors used in the chemical industry and plants in which the products of combustion are used for the direct heating, drying, or any other treatment of objects or materials are excluded from Chapter III and Annex V to the IED. The same exclusion is laid down in Article 2(3) of the MCP Directive. These exclusions have been incorporated into the definition of process furnaces/heaters given in the LCP and LVOC BREFs.

The TWG for the review of the LVOC BREF took decisions for emissions to air from process furnaces/heaters in the scope of the LVOC BREF for the lower olefins and ethylene dichloride crackers. The WGC TWG concluded not to change decisions on BAT and BAT-AELs that were taken during the review of the LVOC BREF.

2.2.3.2 Emissions of combustion plants within the scope of the LCP BREF and MCP Directive

The TWG discussed whether the 1 MW threshold for the total rated thermal input for combustion plants should be removed and finally it should be considered that emissions from combustion plants with a total rated thermal input below 1 MW are not significant. The environmental NGO expressed its concern about excluding the combustion plants that are in the scope of the MCP Directive, as the ELVs were not based on the use of BAT.

Conclusions reached by the TWG:

- To exclude emissions from combustion plants within the scope of the LCP BREF, the MCP Directive or the REF BREF from the scope of the WGC BREF. To exclude combustion plants with a total rated thermal input below 1 MW.

2.2.3.3 Emissions from process furnaces/heaters

The TWG discussed the application of the 1 MW threshold for the total rated thermal input for process furnaces/heaters.

The main issues raised during the TWG discussions were as follows:

- One industry organisation proposed to use the thresholds of the LVOC BREF: 10 MW total rated thermal input, operating time less than 500 h/yr.
- Two MSs stated that the use of the threshold was not clear; thermal oxidisers below 1 MW might be excluded from the scope.
- One MS asked for more information with regards to process furnaces/heaters. The EIPPCB reiterated that a threshold might be set at a later stage of the WGC BREF work, e.g. when defining BAT-AELs.

Thermal oxidisers are the subject of EIPPCB KoM proposal 11 (see Section 2.2.4.2).

After considering all the arguments, the TWG decided:

- To include in the scope of the WGC BREF emissions from process furnaces/heaters used in the chemical industry with a total rated thermal input equal to or greater than 1 MW, with the exception of the process furnaces/heaters used in lower olefins and ethylene dichloride crackers, which are covered by the LVOC BREF.

2.2.3.4 Examples of process furnaces/heaters

The BP contains a consolidated list of subsectors/products/processes involving the use of process furnaces/heaters based on the information provided by the TWG members in their IPs. During the meeting, the EIPPCB presented the results of the further information exchange in the TWG and the preliminary EIPPCB assessments issued on 22 September.

One MS stated that there are two types of process furnaces/heaters; they may require a different approach:

- plants in which the products of combustion are used for direct heating;
- plants in which the heat of combustion is used for indirect heating.

The TWG concluded that further information might be useful to better understand and categorise the examples given for process furnaces/heaters.

The timetable to collect further information on process furnaces/heaters and the subsequent assessments is presented in Section 9.

2.2.4 WI BREF

2.2.4.1 Emissions from the incineration of waste

In the BP, the EIPPCB had proposed to exclude emissions from the incineration of waste covered by the WI BREF from the scope of the WGC BREF. The EIPPCB KoM proposal was broadly supported by the TWG.

A minor editorial change was made after a short discussion, as the TWG considered it appropriate to refer to waste incineration plants as covered by Chapter IV of the IED. Indeed, the scope of IED Chapter IV (Article 42) covers waste incineration plants and waste co-incineration plants which incinerate or co-incinerate solid or liquid waste.

After considering all the arguments, the TWG decided:

To exclude from the scope of the WGC BREF emissions from the incineration plants within the scope of Chapter IV of the IED.

2.2.4.2 Thermal treatment of gaseous effluents

In the BP, the EIPPCB had proposed to include the thermal treatment of gaseous effluents in the scope of the WGC BREF. The EIPPCB KoM proposal was broadly supported by the TWG.

The main issues raised during the TWG discussions were as follows:

- The use of the term 'gaseous effluents' in the EIPPCB KoM proposal was discussed. The EIPPCB stated that the term was used in Directive 2008/98/EC on waste, but that the CWW BREF referred instead to 'waste gas streams' which might therefore be a better term.
- One MS and one industry organisation proposed that waste incineration should be excluded from the scope of the WGC BREF; other MSs supported the EIPPCB KoM proposal.

The need for a differentiated data assessment (i.e. depending on the O_2 content) was highlighted by IT.

After considering all the arguments, the TWG decided:

- ["*To include the thermal treatment of waste gas streams in the scope of the WGC BREF, including when this is carried out in waste incineration plants.*"–This conclusion was amended at the Interim Meeting – see Section 4.6.1.]

2.2.5 ICS BREF

In the BP, the EIPPCB had proposed to exclude emissions from indirect cooling systems from the scope of the WGC BREF. The EIPPCB KoM proposal was broadly supported by the TWG.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

➢ To exclude emissions from indirect cooling systems from the scope of the WGC BREF.

2.3 Consideration of specific subsectors/ products/ processes

2.3.1 Production of sulphuric acid

The initial proposal of the EIPPCB to include sulphuric acid in the scope of the WGC BREF was based on the following considerations:

- The mandate given to the TWG by the IED Article 13 Forum is to cover as many relevant sources for emissions to air as possible and manageable in order to minimise the need to review the remaining chemical BREFs.
- In 2010, the TWG for the review of the IS BREF decided that the IS BREF should not cover the production of sulphuric acid in coke oven plants. Similarly in 2014, the TWG for the review of the NFM BREF decided that the NFM BREF should not cover the installations where the production of sulphuric acid is based on SO_2 gases coming from NFM activities. At the time, the drawing up of the WGC BREF was not yet envisaged, and it was considered that this issue would be better dealt with as part of the review of the LVIC-AAF BREF.
- However, in 2016, the European Commission informed the Industrial Emissions Expert Group (IEEG) that the drawing up of the WGC BREF would be the first opportunity to reassess the BAT-AELs set in the LVIC-AAF BREF for the production of sulphuric acid.
- The preliminary analysis conducted by the EIPPCB indicates that the production of sulphuric acid is particularly relevant for emissions of SO_X to air.

Half of the TWG members agreed in their IPs with the EIPPCB KoM proposal to include sulphuric acid in the scope of the WGC BREF. However, during the meeting, many TWG members indicated their preference to deal with this specific issue of that production process in a revised LVIC-AAF BREF and to holistically address all potential environmental impacts (e.g. including energy efficiency), even though this may further delay the opportunity to tackle emissions to air. Some others indicated that they could accept the inclusion of the production of sulphuric acid in the scope of the WGC BREF, provided that a detailed integrated approach is followed and/or a dedicated chapter is created in the WGC BREF. Other TWG members indicated their willingness to deal with this issue as soon as possible in the WGC BREF, given the uncertainty around the LVIC-AAF BREF revision.

Many TWG members expressed general concerns during the discussion, namely the following:

- The likelihood of a sizeable workload if dealing with many specific issues in a generic BREF. One MS raised particular concerns about the limited resources available compared to the potentially large variety of processes in the scope.
- The complexity of the production process which the WGC BREF might not be able to address appropriately. More precisely, several industry organisations argued that the emissions can vary significantly depending on the production process and the process conditions and that the integrated approach of the IED would not be followed.
- The opportunity to deal with other relevant non-air-related issues would be missed (e.g. emissions to water, energy efficiency, generation of waste).
- The uncertainty over the future of the remaining chemical BREFs and over the result of the discussions during the next IED Article 13 Forum meeting in December 2017.

The EIPPCB reflected on these concerns as follows:

- Whether tackled in the WGC BREF or in another BREF, the workload would remain at least the same. During a potential review of the LVIC-AAF BREF, the workload is likely to be even higher as non-air-related issues would also be covered. Arguably, the workload would be spread over a longer period of time, but this would mean further delays in deriving and implementing BAT-AELs for these significant emission sources.
- The need for a specific, integrated approach on sulphuric acid production in the WGC BREF would be ensured by developing complementary worksheets along with the generic questionnaire in order to ensure that the operators are asked all the relevant questions.
- Non-air-related issues might be important, but they could be looked at when the drawing up of the WGC BREF is at a sufficiently advanced stage.
- The quality of the chemical BREFs drawn up under the IPPC Directive was acknowledged. Therefore, the EIPPCB would not recommend repealing them without ensuring that the information is maintained. On the contrary, they should be used as much as possible in the WGC work, for example by cross-referencing, in order to avoid redoing work.

DG ENV reminded the TWG that the work programme from January 2016 foresees that the work on the WGC BREF involves collecting comprehensive data across the whole chemical industry, so that an informed decision on the fate of the other BREFs can be taken later on. DG ENV outlined that it expected to see the production of sulphuric acid also included in the scope of the WGC BREF as a consequence of that principle. This does not exclude discussing this matter further at the next IED Article 13 Forum.

One MS added that it was not within the mandate of the WGC TWG to decide whether to include the production of sulphuric acid in the LVIC-AAF BREF. Consequently, excluding sulphuric acid from the scope of the WGC BREF may result in a very important chemical production process not being dealt with at all.

At the end of the discussion, the MSs, the environmental NGO and the industry organisations agreed to make the following recommendation to the IED Article 13 Forum:

- ➢ The TWG for the drawing up of the WGC BREF recommends to the IED Article 13 Forum that the production of sulphuric acid should be excluded from the scope of the WGC BREF and instead be dealt with as part of a review of the LVIC BREFs because of concerns about the consequences on the workload, the risk of not tackling non-air-related KEIs, overall quality, ambition level and the need for a process-integrated approach.

2.3.2 Consideration of specific subsectors/products/processes

The data collection will be carried out using generic worksheets to collect comprehensive and representative information on abatement techniques and emission levels across the whole chemical industry. Complementary worksheets will be used to collect additional information and data from specific subsectors/products/processes that require a dedicated approach.

The EIPPCB recalled the steps for the consideration of specific subsectors/products/processes that have already been carried out:

1. The BP contains a consolidated list of subsectors/products/processes based on the information provided by the TWG members in their IPs. However, the information in the IPs is partly incomplete and/or not all cited processes/products seem to require a complementary worksheet in order to address the associated KEI.

2. The EIPPCB proposed criteria in the BP to decide when complementary worksheets are needed and sent an example assessment to the TWG on 28 July. In the same communication, TWG members were asked to provide arguments by 4 September that would justify the drawing up of specific complementary worksheets for those products/processes that they had proposed in their IPs.

3. The EIPPCB issued an updated consolidated list including the preliminary results of the EIPPCB assessment on 22 September.

The EIPPCB recognised that the work to complete and assess the information provided is still in progress.

One MS stated that the need for complementary worksheets was linked to specific chapters in the WGC BREF. This MS also stated that, if required, an assessment should be carried out on the need for a specific chapter; in other cases no specific chapter should be added. One industry organisation suggested that the assessment could also lead to the exclusion of a production process from the scope of the WGC BREF, in addition to determining whether a generic or a specific worksheet is required for this particular production process.

One industry organisation and one MS asked about the criteria or parameters that were taken into consideration for the example assessments provided by the EIPPCB on 28 July 2017. The EIPPCB presented the main criteria and questions that were used for building this preliminary assessment of 22 September 2017. The EIPPCB asked the TWG to provide additional criteria or questions for the assessment of the remaining substances.

Questions on the application of the criteria and the rationale for the EIPPCB preliminary results were raised by several MSs and industry organisations. The EIPPCB exemplified a few preliminary results of the assessments:

- Flame retardants: The EIPPCB received no further arguments that would justify the drawing up of a complementary worksheet. Flame retardants are a large group of different compounds, including organic and inorganic substances. Therefore, the generic approach of the WGC BREF seems suitable.
- Aniline / nitrogenous hydrocarbons: The argument to justify the drawing up of a complementary worksheet is related to the use of thermal oxidisers; nitrogen oxide emissions depend on the presence of nitrogenous compounds and hydrogen in the waste gas stream. High pollutant loads as well as the presence of NO_X precursors and hydrogen in waste gas streams and the related emissions can be asked for in the generic worksheets. For example, the BAT-AEL for NO_X in the OFC BREF differs according to the input of nitrogenous compounds. Using generic worksheets, the TWG may nevertheless decide at a later stage on the need to differentiate between BAT-AELs depending on the waste gas composition.
- Aluminium fluoride: The arguments to justify the drawing up of a complementary worksheet are related to specificities of the production process. However, as stated in the LVIC-S BREF, waste gas streams are abated by scrubbers and filters. This is confirmed by the information provided which stipulates that 'most gas emission points of the process are all connected to the same scrubber system, which is often also used by other units (other products from the same plant)'. Using generic worksheets, the

TWG may nevertheless decide at a later stage on the need to differentiate between BAT-AELs depending on the waste gas composition.

- Sulphuric acid: A complementary worksheet is deemed necessary as the emission levels depend first and foremost on process-integrated techniques and are influenced by the raw material (i.e. the concentration of sulphur dioxide and its temporal variability).

One industry organisation and some MSs argued that the development of the questionnaire should not be discussed as long as there was no final conclusion on the scope. They were also of the opinion that the discussion on the complementary worksheets for the data collection should be linked with the next IED Article 13 Forum's meeting and the question should be put to the Forum as to whether and when the LVIC and POL BREFs would be reviewed. To that end, the need for complementary worksheets and specific chapters in the WGC BREF is considered a relevant input for the next IED Article 13 Forum's meeting.

DG ENV recalled the agreed way forward that the Forum will consider the review of the other chemical BREFs when the WGC BREF is at a sufficiently advanced stage. Many TWG members asked for this point to be further clarified at the next IED Article 13 Forum meeting.

In order to inform the Forum on the progress of the WGC BREF in a timely manner, the TWG concluded on a timetable to assess the need for complementary worksheets (see Section 9).

3 SCOPE (ISSUES COVERED IN THE IED ARTICLE 13 FORUM MEETING)

3.1 Recommendation from the Kick-off Meeting

At the KoM the TWG discussed including sulphuric acid production in the scope WGC BREF and decided to refer the matter to the IED Article 13 Forum They agreed to make the following recommendation to the IED Article 13 Forum:

- The TWG for the drawing up of the WGC BREF recommends to the IED Article 13 Forum that the production of sulphuric acid should be excluded from the scope of the WGC BREF and instead be dealt with as part of a review of the LVIC BREFs because of concerns about the consequences on the workload, the risk of not tackling non-air-related KEIs, overall quality, ambition level and the need for a process-integrated approach.

3.2 Discussions at the Article 13 Forum meeting

The recommendation relating to sulphuric acid production and the wider issue of the future of the chemical BREFs were discussed at the 11th IED Article 13 Forum meeting, held in Brussels on 19 – 20 December 2017. At this meeting, there was a decision that:

- In addition to the WGC BREF there will be a BREF on Large Volume Inorganic Chemicals (LVIC BREF). These two BREFs will close the current work programme on the chemical BREFs and any remaining gaps could be covered by the next BREF review cycle.

4 SCOPE (ISSUES COVERED IN THE INTERIM MEETING)

4.1 Introduction

In the IM paper, a number of large volume inorganic chemical processes were assessed to determine if they should be proposed for exclusion from the scope of the WGC BREF. These were:

- The 9 processes covered by the LVIC-AAF BREF (see Section 4.2 of this document).
- The 22 processes covered by the LVIC-S BREF (see Section 4.3 of this document).
- The 44 subsectors/products/processes that had previously been assessed to determine if a complementary worksheet is needed in the WGC generic questionnaire. The list was reviewed to determine if any of them are large volume inorganic chemicals, not included in the scope of the LVIC-AAF BREF or the LVIC-S BREF, that should be considered as candidates to be excluded from the scope of the WGC BREF (see Section 4.5 of this document).

The criteria that were used to assess each of the processes were:

- **Environmental issues.** The WGC BREF will only cover emissions into the air so if a process generates significant emissions of waste water and other wastes it might be sensible to exclude it from the WGC BREF scope.
- **Integration with other processes.** A process that only has emissions to air would normally be included in the WGC BREF. However, if it is integrated with a large volume inorganic chemical process that is excluded from the scope of the WGC BREF because it has other relevant environmental issues, then it might be sensible to exclude both processes from the scope of the WGC BREF.
- **Number of installations.** If a process is only carried out on a small number of European installations, then it will be difficult to collect enough data to set robust BAT. Also, the benefit of process-specific BATs will be limited because they will only apply to a small number of installations.
- **Size of installations.** Even though the number of installations producing a certain product might be sufficient to set robust BAT, the overall capacity might still be limited compared to other production processes and therefore also the environmental impact.

The EIPPCB IM proposals also considered if there were any new processes or techniques that had been developed since the current LVIC-AAF, LVIC-S, OFC, POL and SIC BREFs were published in 2006-2007. If the production of a chemical is included in the scope of the WGC BREF, then new processes or techniques can only be described if they are related to emissions to air. If they are related to other environmental issues then they will have to wait until the next BREF review cycle.

Prior to the Interim Meeting, TWG members requested that some of the conclusions reached during the Kick-off Meeting should be discussed again. The conclusions were discussed during the IM and as a consequence of the discussions some KoM conclusions were amended (see Sections 4.5 and 4.6 of this document).

On the second day of the Interim Meeting the TWG discussed the data collection questionnaire. As a consequence of the discussions one of the KoM conclusions was deleted (see Section 7.8 of this document).

4.2 The 9 processes covered by the LVIC-AAF BREF

4.2.1 Proposals agreed before the meeting

The EIPPCB IM proposal was that all the processes described in the current LVIC-AAF BREF, except for the production of hydrofluoric acid, should be excluded from the scope of the WGC BREF. These were the production of: ammonia, nitric acid, sulphuric acid, phosphoric acid, NPK compound/multi-nutrient fertilisers and calcium nitrate, urea and ammonium nitrate and superphosphates. Hydrofluoric acid would be discussed at the IM.

Taking into account the discussion at the KoM and at the 11th IED Article 13 Forum meeting, the EIPPCB expected that the TWG would agree with this proposal. The EIPPCB therefore suggested in an email sent to the TWG on 14 February 2018 that the TWG should agree this by correspondence by 23 February, well in advance of the Interim Meeting.

The TWG members who agreed with the EIPPCB IM proposal were: AT, BE, CZ, DE, DK, ES, FR, IE, IT, NL, PL, PT, SE, SK, UK, CEFIC, Eurofer, Eurometaux and Fertilisers Europe. No TWG members disagreed with the proposal. The EIPPCB presented this proposal and the responses of the TWG at the IM. The proposal was confirmed without a discussion.

4.2.2 Sulphuric acid production from spent sulphuric acid

The EIPPCB IM proposal was that all the sulphuric acid processes described in the LVIC-AAF BREF should be excluded from the scope of the WGC BREF and that was agreed by the TWG before the Interim Meeting, as described in section 4.2.1 above.

However, the scope of the LVIC-AAF BREF did not include "the reconcentration or purification of spent sulphuric acids". The EIPPCB IM proposal for the sulphuric acid plants excluded from the scope of the LVIC-AAF BREF was:

- Some chemical processes use sulphuric acid and generate a waste stream of spent sulphuric acid which may be reconcentrated and/or purified to produce a sulphuric acid that can be reused in the process or sold.

- Some sulphuric acid plants treat spent sulphuric acid by thermal decomposition to generate sulphur dioxide that is converted back into sulphuric acid. These plants are similar to the other sulphuric acid plants that use sulphur dioxide as a feedstock, so they should not be covered in different BREFs. Hence these plants should be excluded from the WGC BREF scope.

- Some sulphuric acid plants treat spent sulphuric acid by physical reconcentration and purification, but do not produce sulphur dioxide as an intermediate. These plants should be included in the WGC BREF scope. They will often be integrated with a chemical process that is using sulphuric acid and generating spent acid, for example to carry out alkylations, nitrations or sulphonations.

One industry organisation provided information in advance of the meeting that some sulphuric acid plants treating spent sulphuric acid by physical reconcentration and purification are integrated with large volume inorganic chemical processes such as titanium dioxide production. One industry organisation proposed that these sulphuric acid plants should be covered in the same BREF as the process that they are integrated with.

The EIPPCB IM proposal and the information provided by the industry organisation were discussed by the TWG and it was agreed that sulphuric acid plants treating spent sulphuric acid by physical reconcentration and purification should be covered in the same BREF as the process that they are integrated with (see conclusion in Section 4.2.4).

4.2.3 Hydrofluoric acid

The EIPPCB IM proposal was that hydrofluoric acid uses end-of-pipe treatment for waste gases, the impact of emissions to water is limited, it is not integrated with the production of fertilisers and there are only 12 installations in Europe, so the data set will potentially be too small to set process-specific BAT-AELs. Hence it should be included in the WGC BREF scope.

One industry organisation provided information in advance of the meeting that there were only 9 plants in Europe and that they operate a complicated, process integrated gas treatment system comprising purification followed by product recovery then residual waste gas treatment. The industry organisation proposed that the process should be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal and the information provided by the industry organisation were discussed by the TWG and it was agreed that hydrofluoric acid production should be excluded from the scope of the WGC BREF (see conclusion in Section 4.2.4).

4.2.4 TWG Conclusions relating to LVIC-AAF processes

The conclusions reached by the TWG were:

- To exclude from the scope of the WGC BREF all of the activities that are included in the scope of the LVIC-AAF BREF. These are:
    - Ammonia;
    - Nitric acid;
    - Sulphuric acid;
    - Phosphoric acid;
    - Hydrofluoric acid;
    - NPK and CN (NPK fertilisers and calcium nitrate);
    - UREA and UAN (urea ammonium nitrate);
    - AN and CAN (ammonium nitrate and calcium ammonium nitrate);
    - Superphosphates.

- The scope of the LVIC-AAF BREF includes all sulphuric acid plants that convert sulphur dioxide into sulphuric acid, so all of these plants will be excluded from the scope of the WGC BREF.

- Some sulphuric acid plants carry out the physical purification and reconcentration of spent sulphuric acid and do not use sulphur dioxide as a feedstock. These plants will be excluded from the scope of the WGC BREF if they are co-located/integrated/associated with a process that is excluded from the scope of the WGC BREF.

4.3 The 22 processes covered by the LVIC-S BREF

4.3.1 Carbon black

The EIPPCB IM proposal was that carbon black production only has relevant emissions to air and it is not integrated with any other processes that are likely to be excluded from the WGC BREF scope, so it should be included in the scope of the WGC BREF.

One industry organisation provided information in advance of the meeting that there are new techniques that have been developed since the LVIC-S BREF was written, that emissions to air of NO_x and SO_x are dependent on the feedstock used, that the use of energy is highly integrated, and that the quantities of hazardous sludges produced are significant. The industry organisation proposed that the process should be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal and the information provided by the industry organisation were discussed by the TWG and it was agreed that carbon black should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.2 Calcium carbide

The EIPPCB IM proposal was that calcium carbide production only has relevant emissions to air and it is not integrated with any other processes that are likely to be excluded from the WGC BREF scope and there are only 7 plants in Europe, so the data set would potentially be too small to set process-specific BAT-AELs. Hence it should be included in the scope of the WGC BREF.

One industry organisation provided information in advance of the meeting that there are now only 5 plants in Europe, that 80% of the off-gas is carbon monoxide and burning it involves balancing the emissions to air of CO and NO_x and that the process involves a furnace operating at 2000ºC which is more like a metals process than a chemical process. The industry organisation proposed that the process should be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal and the information provided by the industry organisation were discussed by the TWG and it was agreed that calcium carbide should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.3 Sodium silicate

The EIPPCB IM proposal was that sodium silicate production only has relevant emissions to air and it is not integrated with any other processes that are likely to be excluded from the WGC BREF scope, so it should be included in the scope of the WGC BREF.

One industry organisation provided information in advance of the meeting that the total annual production exceeds 1Mt/year, that 25 -50% of plants are co-located with plants producing synthetic amorphous silica or zeolites and that the process involves a furnace operating at 1000ºC which is more like a glass process than a chemical process. The industry organisation proposed that the process should be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal and the information provided by the industry organisation were discussed by the TWG and it was agreed that sodium silicate should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.4 Synthetic amorphous silica (SAS)

The EIPPCB IM proposal was that SAS production should be included in the scope of the WGC BREF because emissions to air are the predominant environmental issue which can be reduced using generic techniques.

One industry organisation provided information in advance of the meeting that the total annual production exceeds 500kt/year, that the LVIC-S BREF only covers pyrogenic silica which is only 10% of total production, that some SAS plants are co-located with sulphuric acid plants and that the wet process generates >600 kg Na_2SO_4/t SAS and emissions to water are not covered in the LVIC-S BREF. The industry organisation proposed that the process should be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal and the information provided by the industry organisation were discussed by the TWG and it was agreed that synthetic amorphous silica should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.5 Soda ash, calcium chloride and precipitated calcium carbonate

The EIPPCB IM proposals were:

- Soda ash (sodium carbonate**)** production generates significant emissions to water and significant quantities of solid waste, so it should be excluded from the scope of the WGC BREF.
- Calcium chloride production is integrated with soda ash production (50 %), magnesia production (15 %) or uses the acid-limestone route (35 %). If soda ash production is excluded from the scope of the WGC BREF, then all calcium chloride production should also be excluded from the scope of the WGC BREF.
- Precipitated calcium carbonate production is integrated with soda ash production, or lime production. The PCC plants that are integrated with soda ash production should be covered by the same BREF as soda ash. So, if soda ash is excluded from the scope of the WGC BREF, then the associated PCC plants should also be excluded from the scope of the WGC BREF. The PCC plants that are integrated with lime production were not included in the scope of the Cement, Lime and Magnesium Oxide (CLM) BREF. The TWG for the LVIC BREF may need to consider including these PCC plants in the scope of the LVIC BREF.

The EIPPCB IM proposals were discussed by the TWG and it was agreed that soda ash, calcium chloride and precipitated calcium carbonate should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.6 Titanium dioxide, ferrous chloride and ferrous sulphate

The EIPPCB IM proposals were:

- Titanium dioxide production generates significant emissions to water and significant quantities of solid waste, so it should be excluded from the scope of the WGC BREF.
- Ferrous chloride production does not have relevant emissions to air or water but does generate significant quantities of solid wastes. It is highly integrated with titanium dioxide production by the chloride route, so the processes should not be covered by different BREFs. Hence ferrous chloride production should also be excluded from the scope of the WGC BREF.
- Ferrous sulphate (Copperas) production is highly integrated with titanium dioxide production by the sulphate route, so the processes should not be covered by different BREFs. Hence copperas should also be excluded from the scope of the WGC BREF.

The EIPPCB IM proposals were discussed by the TWG and it was agreed that titanium dioxide, ferrous chloride and ferrous sulphate should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.7 Inorganic phosphates

The EIPPCB IM proposal was that the installations that use 'green acid' as a feedstock generate significant emissions to water and significant quantities of solid waste. Setting BAT and BAT-AELs for emissions to air and water is likely to require an understanding of the production process and not only of the abatement techniques that are used. Therefore the production of inorganic phosphates using 'green acid' as a feedstock should be excluded from the scope of the WGC BREF.
The installations that use purified phosphoric acid or pure thermal-grade phosphoric acid as a feedstock have similar relevant emissions to air but generate less significant emissions to water and less significant quantities of solid waste than installations that use 'green acid' as a feedstock. However, to avoid splitting information from the plants across two BREFs, they should all be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that inorganic phosphates should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.8 Sodium chlorate

The EIPPCB IM proposal was that sodium chlorate production generates significant emissions to water and significant quantities of sludges and solid wastes, so it should be excluded from the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that sodium chlorate should be excluded from the scope of the WGC BREF (see Section 4.3.19).

4.3.9 Aluminium fluoride

The EIPPCB IM proposal was that aluminium fluoride production generates relevant emissions to water and significant quantities of solid waste. However, there are only 4 plants in Europe, so the data set will potentially be too small to set process-specific BAT-AELs. Hence aluminium fluoride production should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that aluminium fluoride should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.10 Carbon disulphide

The EIPPCB IM proposal was that carbon disulphide production only has significant emissions to air and it is not integrated with any other processes that are likely to be excluded from the WGC BREF scope and there are only 4 plants in Europe, so the data set would potentially be too small to set process-specific BAT-AELs. Hence it should be included in the scope of the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that carbon disulphide should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.11 Lead oxide

The EIPPCB IM proposal was that lead oxide production only has relevant emissions to air and it is not integrated with any other processes that are likely to be excluded from the WGC BREF scope, so it should be included in the WGC BREF scope.
The production of 'battery oxide' by battery manufacturers for their own use was excluded from the LVIC-S BREF scope. It should be included in the WGC BREF scope.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that lead oxide should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.12 Magnesium compounds

The EIPPCB IM proposal was that magnesium oxide production generates significant emissions to water and significant quantities of solid waste. However, there are only 2 plants in Europe, so the data set would potentially be too small to set process-specific BAT-AELs. Hence magnesium compounds production should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that magnesium compounds should be included in the scope of the WGC BREF.

The TWG agreed to add an explanatory comment to the conclusion "except for the production of magnesium oxide using the dry process route, which is included in the scope of the CLM BREF" (see Section 4.3.19).

4.3.13 Silicon carbide

The EIPPCB IM proposal was that silicon carbide production only has relevant emissions to air and it is not integrated with any other processes that are likely to be excluded from the WGC BREF scope, so it should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that silicon carbide should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.14 Zeolites

The EIPPCB IM proposal was that although zeolites production generates significant quantities of waste water the substances emitted to water are not significant, so it should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that zeolites should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.15 Sodium perborate

The EIPPCB IM proposal was that sodium perborate production does not generate significant emissions to water or significant quantities of solid waste and the number of installations is small, so it should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that sodium perborate should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.16 Sodium percarbonate

The EIPPCB IM proposal was that sodium percarbonate production does not generate significant emissions to water or significant quantities of waste and the number of installations is small, so it should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that sodium percarbonate should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.17 Sodium sulphite

The EIPPCB IM proposal was that sodium sulphite production does not generate relevant emissions to water (apart from suspended solids which is already covered in the CWW BREF) or significant quantities of waste and the number of installations is small, so it should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that sodium sulphite should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.18 Zinc oxide

The EIPPCB IM proposal was that zinc oxide production does not generate significant emissions to water or significant quantities of solid wastes and the number of installations carrying out each of the three process routes is small, so it should be included in the scope of the WGC BREF.

The EIPPCB IM proposal was discussed by the TWG and it was agreed that zinc oxide should be included in the scope of the WGC BREF (see Section 4.3.19).

4.3.19 TWG conclusions relating to LVIC-S processes

The conclusions reached by the TWG were:

- To include in the scope of the WGC BREF the following activities that are included in the scope of the LVIC-S BREF:
    - Aluminium fluoride;
    - Carbon disulphide;
    - Lead oxide;
    - Magnesium compounds, except for the production of magnesium oxide using the dry process route, which is included in the scope of the CLM BREF;
    - Silicon carbide;
    - Sodium perborate;
    - Sodium percarbonate;
    - Sodium sulphite;
    - Zeolites;
    - Zinc oxide.

- To exclude from the scope of the WGC BREF the following activities that are included in the scope of the LVIC-S BREF:
    - Calcium carbide;
    - Calcium chloride;
    - Carbon black;
    - Ferrous chloride;
    - Ferrous sulphate (copperas)
    - Inorganic phosphates;
    - Precipitated calcium carbonate;
    - Soda ash;
    - Sodium chlorate;
    - Sodium silicate;
    - Synthetic amorphous silica (SAS);
    - Titanium dioxide.

4.4 Summary of decisions on the scope of the WGC BREF

Table 1: Decisions on the scope of the WGC BREF taken at the Interim TWG Meeting

Products and Processes	Comments
LVIC-AAF BREF Products and Processes included in the WGC BREF	
None	
LVIC-AAF BREF Products and Processes excluded from the WGC BREF	
Ammonia	
Nitric acid	
Sulphuric acid	Does not include all plants treating spent sulphuric acid*
Phosphoric acid	
Hydrofluoric acid	
NPK and CN	NPK - NPK Fertilisers, CN - calcium nitrate
UREA and UAN	UAN - urea ammonium nitrate
AN and CAN	AN - ammonium nitrate, CAN - calcium ammonium nitrate
Superphosphates	
LVIC-S BREF Products and Processes included in the WGC BREF	
Aluminium fluoride	
Carbon disulphide	
Lead oxide	
Magnesium compounds	†††
Silicon carbide	
Sodium perborate	
Sodium percarbonate	
Sodium sulphite	
Zeolites	
Zinc oxide	
LVIC-S BREF Products and Processes excluded from the WGC BREF	
Calcium carbide	
Calcium chloride	May be integrated with soda ash†
Carbon black	
Ferrous chloride	May be integrated with titanium dioxide (chloride process)††
Ferrous sulphate (copperas)	May be integrated with titanium dioxide (sulphate process)† †
Inorganic phosphates	
Precipitated calcium carbonate (PCC)	May be integrated with soda ash†
Soda ash	May be integrated with calcium chloride and/or PCC†
Sodium chlorate	
Sodium silicate	
Synthetic amorphous silica	
Titanium dioxide	May be integrated with ferrous chloride or ferrous sulphate††
* - The scope of the LVIC-AAF BREF includes all sulphuric acid plants that convert sulphur dioxide into sulphuric acid, so all of these plants will be excluded from the scope of the WGC BREF. Some sulphuric acid plants carry out the physical purification and reconcentration of spent sulphuric acid and do not use sulphur dioxide as a feedstock. These plants will be excluded from the scope of the WGC BREF if they are co-located/integrated/associated with a process that is excluded from the scope of the WGC BREF.	
† - Some soda ash installations co-produce calcium chloride and/or precipitated calcium carbonate.	
†† - Some titanium dioxide installations co-produce ferrous chloride or ferrous sulphate (copperas).	
††† - Except for the production of magnesium oxide using the dry process route, which is included in the scope of the CLM BREF.	

4.5 The list of 44 subsectors/products/processes

4.5.1 Introduction

The EIPPCB had drawn up a list of 44 subsectors/products/processes that had previously been assessed to determine if a complementary worksheet is needed in the WGC generic questionnaire. This list was reviewed to determine if any of them are large volume inorganic chemicals, not included in the scope of the LVIC-AAF BREF or the LVIC-S BREF that should be considered as candidates to be excluded from the scope of the WGC BREF.

There are some entries in the list that are products covered in the LVIC-AAF or LVIC-S BREFs, for example ammonia, sulphuric acid, and titanium dioxide, so they have already been assessed (see Sections 4.3 and 4.4).

There are some entries in the list that describe a subsector, or group, of products. In some cases the EIPPCB IM proposal is that all the products in that subsector should be included in or excluded from the scope of the WGC BREF, e.g. all polymers should be included. However for some of the subsectors there are a few products that have already been covered in the recently published LVOC BREF. For these subsectors the EIPPCB IM proposal is that all the products in that subsector should be included in or excluded from the scope of the WGC BREF except for those products that have already been covered in the LVOC BREF.

4.5.2 HyCo/steam reformers

The IPPCB IM proposal was:

- Reformers integrated with plants covered by the LVOC BREF should be excluded from the WGC BREF scope.
- Reformers should be covered by the same BREF as the process they are integrated with.

One member state and two industry organisations provided information before the meeting that some reformers are permitted as independent installations and some reformers are located on and integrated with, fertilisers' installations, refineries and LVOC plants.

The EIPPCB provided a revised IM proposal at the meeting that:

- reformers that are stand-alone installations should be included in the WGC BREF scope.
- reformers that are integrated with processes not covered by the WGC BREF should be covered by the same BREF as the process they are integrated with (e.g. REF BREF, LVOC BREF). Hence reformers integrated with fertilisers installations should be excluded from the WGC BREF scope.

The EIPPCB IM revised proposal and the information provided by the TWG members were discussed by the TWG and the conclusion reached was:

- ➢ To exclude from the scope of the WGC BREF the reformers that are co-located/integrated/ associated with a process which is excluded from the scope of the WGC BREF.

4.5.3 Metal oxides and pigments

The list of 44 subsectors/products/processes was discussed by the TWG. One Member state and one industry organisation raised concern about how metal oxides and pigments would be covered within the scope of the WGC BREF given the variety and complexity of the processes involved. The EIPPB explained that some of the concerns would be handled using complementary worksheets in the data collection questionnaire and that this would be covered by during day 2 of the interim meeting.

4.5.4 Specific Complementary Worksheets in the Data Collection Questionnaire

Day 2 of the IM discussed the structure and content of the data collection questionnaire. The EIPPCB IM proposal was that there should be specific complementary worksheets for PVC production and viscose production (only the viscose process that generates CS_2 and H_2S, not the Lyocell process).

The EIPPCB IM proposal was discussed by the TWG and it was agreed that additional specific complementary worksheets were needed for polyolefins and solution polymerised rubber.

4.5.5 Final list of 44 subsectors/products/processes

Following the discussions at the meeting the EIPPCB IM proposals for the list of 44 subsectors/products /processes were revised. The TWG conclusion was:

Table 2. The 44 subsectors/products/processes for which a complementary worksheet might be needed in the WGC BREF generic questionnaire, reviewed for the purposes of defining the scope of the WGC BREF

No	Subsector/ Product/ Process	Result of the EIPPCB review
1	Cement additives	All substances used as cement additives should be included in the scope of the WGC BREF scope unless they have been specifically excluded from the scope of the WGC BREF
2	Flame retardants	All substances used as flame retardants should be included in the scope of the WGC BREF scope unless they have been specifically excluded from the scope of the WGC BREF
3	Cyclohexanone oxidation	All plants should be included in the scope of the WGC BREF
4	Urea	All plants should be excluded from the scope of the WGC BREF – see Section 4.2.1 and 4.2.4
5	Aniline	All plants should be included in the scope of the WGC BREF
6	Melamine	All plants should be included in the scope of the WGC BREF
7	Nitrogenous hydrocarbons	All plants should be included in the scope of the WGC BREF unless they are covered by the LVOC BREF
8	Nitro compounds	All plants should be included in the scope of the WGC BREF unless they are covered by the LVOC BREF

No	Subsector/ Product/ Process	Result of the EIPPCB review
9	Aromatic hydrocarbons containing fluorine	All plants should be included in the scope of the WGC BREF
10	Organometallic compounds	All plants should be included in the scope of the WGC BREF
11	Cellulose nitration	All plants should be included in the scope of the WGC BREF
12	Viscose	All plants should be included in the scope of the WGC BREF
13	Polyamide fibres	All plants should be included in the scope of the WGC BREF
14	PVC	All plants should be included in the scope of the WGC BREF
15	Polyester	All plants should be included in the scope of the WGC BREF
16	Acrylic fibres	All plants should be included in the scope of the WGC BREF
17	Cellulose acetate	All plants should be included in the scope of the WGC BREF
18	Polymers and specific plastic materials	All plants should be included in the scope of the WGC BREF
19	Acrylonitrile polymers	All plants should be included in the scope of the WGC BREF
20	Polycarbonate	All plants should be included in the scope of the WGC BREF
21	Synthetic rubbers	All plants should be included in the scope of the WGC BREF
22	Surface-active agents	All substances used as surface-active agents should be included in the scope of the WGC BREF unless they are covered by the LVOC REF
23	CO reformers (i.e. HyCO plants) and steam reformers	To exclude from the scope of the WGC BREF the reformers that are co-located/integrated/ associated with a process which is excluded from the scope of the WGC BREF
24	Ammonia	All plants should be excluded from the scope of the WGC BREF – see Section 4.2.4
25	Hydrofluoric acid	All plants should be excluded from the scope of the WGC BREF – see Section 4.2.3
26	Nitrosyl sulphuric acid	All plants should be included in the scope of the WGC BREF
27	Nitric acid	All plants should be excluded from the scope of the WGC BREF – see Section 4.2.4
28	Phosphoric acid	All plants should be excluded from the scope of the WGC BREF– see Section 4.2.4
29	Sulphuric acid	All plants should be excluded from the scope of the WGC BREF scope – see Section 4.2.2
30	Sodium hydrogen sulphate	All plants should be included in the scope of the scope of the WGC BREF
31	Sodium carbonate	All plants should be excluded from the scope of the WGC BREF scope – see Section 4.3.5
32	Salts	All salts production should be included in the scope of the WGC BREF unless they have been specifically excluded from the scope of the WGC BREF

No	Subsector/ Product/ Process	Result of the EIPPCB review
33	Non-metals, metal oxides or other inorganic compounds	All non-metals, metal oxides or other inorganic compounds should be included in the scope of the WGC BREF unless they have been specifically excluded from the scope of the WGC BREF
34	Pigments	All pigments should be included in the scope of the WGC BREF unless they have been specifically excluded from the scope of the WGC BREF (e.g. titanium oxide)
35	Aluminium fluoride	All plants should be included in the scope of the WGC BREF – see Section 4.3.9
36	Ferric oxide from copperas	All plants should be excluded from the scope of the WGC BREF – see Section 4.3.6
37	Sodium silicate	All plants should be excluded from the scope of the WGC BREF – see Section 4.3.3
38	Sulphur	All plants should be included in the scope of the WGC BREF unless they are covered by the REF BREF
39	Titanium dioxide	All plants should be excluded from the scope of the WGC BREF – see Section 4.3.6
40	Carbon black	All plants should be excluded from the scope of the WGC BREF – see Section 4.3.1
41	Fertilisers (include AN, CN, CAN, NPK, phosphates (SSP and TSP))	All plants should be excluded from the scope of the WGC BREF – see Section 4.2.4
42	Plant protection products or biocides	All plants should be included in the scope of the WGC BREF
43	Pharmaceuticals	All plants should be included in the scope of the WGC BREF
44	Explosives	All plants should be included in the scope of the WGC BREF

4.6 SCOPE – amendment of the conclusions of the KoM decided at the IM

4.6.1 Thermal treatment of gaseous effluents

The discussions held at the KoM are summarised in Section 2.2 of this document. The conclusions were:

- To exclude from the scope of the WGC BREF emissions from the incineration plants within the scope of Chapter IV of the IED (see Section 2.2.4.1).

- To include the thermal treatment of waste gas streams in the scope of the WGC BREF, including when this is carried out in waste incineration plants (see Section 2.2.4.2).

Prior to the Interim Meeting, one industry organisation provided information that described potential overlaps between the scope of the WGC BREF and the waste incineration requirements of the IED. To resolve the problem, the industry organisation proposed that the wording of the conclusion in Section 2.2.4.2 could be amended to:

- To include the thermal treatment of waste gas streams in the scope of the WGC BREF, including when this is carried out in a directly associated waste incineration plant incinerating less than 10t/d hazardous waste or less than 3t/h non-hazardous waste and the waste gas stream is the main contributor to the input stream.

The issue was discussed by the TWG and they decided to amend the wording of the conclusion in section 2.2.4.2. The amended conclusion was:

- To include the thermal treatment of waste gas streams in the scope of the WGC BREF, except when this is carried out in waste incineration plants.

4.6.2 Channelled emissions from LVOC

The discussions held at the KoM are summarised in Section 2.1 of this document. The conclusions were:

- To cover all chemical installations falling under the scope of the IED in the scope of the WGC BREF (unless specifically excluded by other decisions), see Section 2.1.1.

- To include channelled emissions to air in the scope of the WGC BREF except for those processes for which BAT-AEPLs have already been set during the review of the LVOC BREF, unless the LVOC TWG recommended that the WGC BREF should address specific issues (e.g. NO_X emissions from thermal oxidisers). This includes covering in the WGC scope emissions from individual and combined waste gas streams (see Section 2.1.2).

Prior to the Interim Meeting, one industry organisation provided information that described their concerns that Conclusion 2.1.2 might need to be amended following the decision taken at the Article 13 Forum meeting that there would be an LVIC BREF in addition to the WGC BREF.

To resolve the problem raised by the industry organisation, the EIPPCB IM proposal was that the wording of the conclusion in Section 2.1.2 could be amended to:

- to exclude from the scope of the WGC BREF channelled emissions to air from those LVOC production processes addressed in the Chapters 3 to 12 of the LVOC BREF (see Section 2.1.2).

The issue was discussed by the TWG and they decided not to amend the wording of the KoM conclusion 2.1.2. The conclusion remains the same:

- To include channelled emissions to air in the scope of the WGC BREF except for those processes for which BAT-AEPLs have already been set during the review of the LVOC BREF, unless the LVOC TWG recommended that the WGC BREF should address specific issues (e.g. NO_X emissions from thermal oxidisers). This includes covering in the WGC scope emissions from individual and combined waste gas streams.

4.7 Recommendations to the LVIC BREF TWG

During the Interim Meeting the TWG was concerned that processes excluded from the scope of the WGC BREF might not be included in the scope of the future LVIC BREF. To address these concerns the TWG conclusions were:

- **The TWG for the WGC BREF makes the following recommendations to the TWG for the LVIC BREF:**
- All of the processes that are included in the scope of the LVIC-AAF BREF have been excluded from the scope of the WGC BREF. These should be reviewed as candidates to be included in the scope of the LVIC BREF.
- Some of the processes that are included in the scope of the LVIC-S BREF have been excluded from the scope of the WGC BREF. These should be reviewed as candidates to be included in the scope of the LVIC BREF.

5 STRUCTURE OF THE WGC BREF AND OF ITS BAT CONCLUSIONS

In the BP, the EIPPCB had proposed to generally use the structure of the revised CWW BREF for the drawing up of the WGC BREF, since those two BREFs are complementary. Although no TWG member disagreed with the initial proposal, many expressed concerns over the possible duplication of the information already present in the CWW BREF on emissions to air. One MS proposed using cross-references or alternatively importing the information of the CWW BREF into the WGC BREF. Other TWG members feared that the use of cross-references might be confusing, and favoured having all the information in the same document. The EIPPCB indicated that cross-references would generally refer to the descriptions of the techniques and would not be used in the BAT conclusions.

One MS reflected that discussing the detailed structure and the conditions of cross-references to other specific BREFs may be premature at this stage. The conclusion should therefore leave enough flexibility so that the structure can be adjusted to the most suitable form later, if needed. The EIPPCB indicated that some flexibility was already provided in the BP proposal through the word 'generally'.

One MS also proposed to remove the detailed subdivisions under the Section 3.2.2 individual waste gas treatment techniques, as these titles seemed to overlap.

Following the discussion on the scope, the proposal from the BP was amended in order to include all emissions (channelled and diffuse). For the same reason, the example related to the production of sulphuric acid was removed from the general structure.

Some MSs remarked that the titles of the CWW BREF and the WGC BREF both mentioned waste gas treatment, and that therefore the interaction between those two documents would require further clarification.

After considering all the arguments, the TWG decided:

- To generally use the following structure for the drawing up of the WGC BREF and to use as far as possible cross-references to the CWW BREF and other more specific chemical BREFs.
- To decide at a later stage of the drawing up of the WGC BREF if Chapters 3 and 4 should be subdivided to address specific subsectors/products/ processes.

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6. Concluding remarks and recommendations for future work

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6 KEY ENVIRONMENTAL ISSUES (KEIS) FOR THE WGC BREF

6.1 Overview

In the BP, a list of KEI candidates was compiled (as single substances and groups of substances) containing more than 60 pollutants, emitted to air by the chemical industry. The responses provided by the TWG members showed a wide range of different views. For a few substances and groups, almost all TWG members agreed to include them as KEIs, and for a few others, there was broad agreement not to include them. In between, there were a significant number of substances on which the TWG was divided in its opinion.

Some TWG members proposed the following additional KEI candidates: acrylonitrile, amines, isocyanates, metals class I, II and III, odour and 1,3-butadiene.

In the BP, the EIPPCB had proposed that some KEI candidates should not be 'for discussion at the Kick-off Meeting' when a large TWG majority was in favour or against the inclusion of that KEI candidate and when the EIPPCB assessment confirmed this TWG position. On this basis, the BP proposed the following:

- Not to discuss the inclusion of NO_X, dust, SO_X, TVOC and ammonia.
- Not to discuss the exclusion of arsenic, mercury, carbon dioxide, tetrachloroethylene, naphthalene, phenol, acetic acid, methanol, zinc and phosphates. However, arsenic, mercury, tetrachloroethylene, naphthalene, phenol, and methanol were put back on the agenda for discussion at the request of some TWG members. At a later stage of the Kick-off Meeting, some TWG members withdrew their request. As a result, mercury and methanol were discussed, but arsenic, carbon dioxide, tetrachloroethylene, naphthalene and phenol were not.
- Formaldehyde was marked as 'not proposed for discussion' but this was a mistake in the BP and formaldehyde was therefore put on the agenda for discussion.

In their IP, FR had requested that 1,3-butadiene should be considered as a KEI candidate. The EIPPCB had forgotten to include 1,3-butadiene in the BP so it was put back on the agenda for discussion.

In total there were 64 KEI candidates, with the EIPPCB proposing that 27 should be included as KEIs and 37 should not.

The conclusions of the meeting are summarised in Table 3 below. The TWG agreed to include 28 (groups of) substances as KEIs.

Table 3: KEIs for the drawing up of the WGC BREF as agreed during the Kick-off Meeting

(Groups of) Substances included as KEIs	Comments
European Air Quality Standards substances:	
Nitrogen oxides (NO_X)	
Dust	including PM_{10} and $PM_{2.5}$ data*
Sulphur oxides (SO_X)	
Carbon monoxide	
Benzene	
Lead and its compounds (as Pb)	
Nickel and its compounds (as Ni)	
Stockholm Convention substances:	
PCDD/Fs (dioxins + furans)	as I-TEQ and WHO-TEQ*
Greenhouse gases:	
Nitrous oxide (N_2O)	
Ozone-depleting substances:	
Tetrachloromethane (CCl_4)	
Other organic substances:	
TVOC (Total volatile organic compounds)	
Formaldehyde	
Vinyl chloride monomer (VCM)	specific to polymer production
Ethylene dichloride (EDC)	
Chloromethane	
Dichloromethane	
Trichloromethane	
Ethylene oxide	
Propylene oxide	
Toluene	
1,3-Butadiene	
Other gases:	
Ammonia (NH_3)	
Gaseous chlorides (expressed as HCl)	including HCl data*
Elementary chlorine (Cl_2)	
Gaseous fluorides (expressed as HF)	
Hydrogen sulphide (H_2S)	only for viscose production
Carbon disulphide (CS_2)	only for viscose production
Hydrogen cyanide (HCN)	

* When such data are available.

Not included as KEIs: CMR substances†, Other harmful organic substances†, non-CMR halogenated organic compounds†, Arsenic, Cadmium, PAHs, Hexachlorobenzene, Mercury, Carbon dioxide, Methane, HFCs, PFCs, Sulphur hexafluoride, CFCs, HCFCs, Halons, 1,1,1-Trichloroethane, Trichloroethylene, Tetrachloroethylene, Di-(2-ethylhexyl) phthalate (DEHP), Naphthalene, Phenol, Acetic acid, Methanol††, Halogens, Hydrogen bromide, Metals class I, II and III†, Zinc, Phosphates, Acrylonitrile, Amines, Isocyanates.

† Data will not be collected on this group, but data will be collected for some individual substances of the group.
†† TWG will seek to exchange further information on emissions of methanol.

6.2 Identification of relevant substances

6.2.1 EIPPCB approach

The EIPPCB recalled the criteria for identifying KEIs that was touched upon in the presentation by DG ENV during the introduction to the meeting:

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

The EIPPCB presented its approach to assessing KEI candidates in a consistent and practical manner (see BP Section 4.2). The EIPPCB assessments were mainly based on the application of a decision tree using the following criteria:

1. Environmental relevance of the pollution.
2. Significance of the chemical activities.
3. Likely availability of emission data.

The environmental **relevance** of pollution for each KEI candidate was assessed as 'high' or 'low' based on its toxicity to human health and the environment as well as on the recognition of its relevance in international treaties or European legislation. A substance was rated as 'high' if any of the following criteria was met:

- The substance is a CMR substance with a harmonised classification Category Code of 1 or 2 under Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (the CLP Regulation).
- The substance is an SVHC.
- A European Ambient Air Quality Standard has been set for the substance.
- The substance is subject to an International Convention to restrict its use or to reduce its emissions.
- The substance is a greenhouse gas or an ozone-depleting substance.
- BAT-AEPLs have been set in other chemical BREFs for the substance.

The **significance** of chemical activities for each KEI candidate has been assessed as 'high', 'medium' or 'low' using E-PRTR data:

- high: the chemical sector emits more than 5 % of the total industrial emissions;
- medium: the chemical sector emits between 2 % and 5 % of the total industrial emissions;
- low: the chemical sector emits less than 2 % of the total industrial emissions.

The 2 % and 5 % values were chosen solely because they were pragmatic and seemed to work in practice. For example, there seemed to be broad agreement within the TWG that gaseous chlorides should be included as a KEI group in the WGC BREF and the chemical sector emits 2.1 % of total industrial emissions, so setting the threshold at 2 % gives a result of 'medium'.

The likely **availability of emission data** for each KEI candidate was assessed as 'high', 'medium' or 'low' based on the information from the E-PRTR, as well as the UBA(DE) and VCI reports prepared in the context of front-loading the work on the WGC BREF:

- high: more than 30 data points available;
- medium: between 10 and 30 data points available;
- low: less than 10 data points available.

Past experience suggests that more than 10 data points generally provide a sufficient basis for setting BAT-AEPLs while more than 30 data points generally provide a very good basis.

In addition to the three aforementioned criteria, the **availability of standardised emission monitoring methods** was checked for each KEI using the ROM, the LVOC BREF (final draft), the UBA(DE) report and EN standards. It is expected that the WGC BREF questionnaire will ask for emission data and information on the monitoring method. The preference will be for data that have been obtained using a European standard, because this will ensure the comparability of the monitoring data. The availability of a European standard was, however, not used as a criterion to propose whether or not a substance should be included as a KEI.

The EIPPCB explained that criteria 1 and 2 refer directly to the general criteria recalled by DG ENV. However, the criteria 3 and 4 of DG ENV were, in the case of the WGC BREF, difficult to apply, because the scope of the WGC BREF regarding emissions to air is wider than that of the previous chemical BREFs, as it intends to deliver BAT-AELs for all chemical activities for the first time. Therefore, criteria 3 and 4 were not systematically assessed. Nevertheless, the EIPPCB assessed in a number of cases whether potential BAT and BAT-AELs could provide added value compared to existing European legislation. Some cases were thus identified for which the potential for BAT-AELs that would significantly improve the level of environmental protection is low, for example in the case of the KEI candidate mercury (see Section 6.2.5).

In the discussions, one industry organisation raised the following main concerns:

- The EIPPCB approach put too much weight on the criterion of environmental relevance and too little on the significance of the activity, e.g. in the case of CMR substances.
- The EIPPCB approach resulted in a list of 26 proposed KEIs. The concern was raised that the induced workload might not be manageable for industry to provide data, for MSs to evaluate and check these data and for the EIPPCB to analyse them.
- DG ENV criteria 3 and 4 were not addressed and relevant information in this regard supplied by industry was not taken into account.

The environmental NGO and some MSs argued that they generally consider substances included in Annex II to the IED as KEIs, e.g. CMR substances. Their main concerns were that the availability of data and the significance of the activity should not be used as criteria to decide on KEIs. On the contrary, those cases should be looked into further, so that this data collection helps fill data gaps and does not only rely on E-PRTR data.

Two MSs proposed to identify whether a KEI is relevant for the whole chemical industry or only for specific products/processes/subsectors.

DG ENV reminded the TWG that the general criteria were only established as an orientation for the TWG to facilitate the identification of KEIs for each BREF but should not be

misunderstood as conclusive or exhaustive. A project carried out by a consultant is ongoing to provide further input on how to assess these criteria, in particular for the review of the TXT and SA BREFs.

The EIPPCB reflected that its approach was not only hazard-based (i.e. based on environmental relevance) and that, for example, some CMR substances were screened out (e.g. tri- and tetrachloroethylene). The approach made use of the front-loading information and allowed the assessment of the **relative** importance of KEI candidates with the aim of ensuring that the data collection and subsequent data analysis would be manageable. The proposed list of KEIs contains a number of substances for which BAT-AELs have not been set yet in other BREFs.

The TWG acknowledged that there was currently no agreed methodology to decide on KEIs and that the EIPPCB approach used for the WGC BREF would not necessary set a precedent for other BREFs to be drawn up or reviewed in the future. The TWG also recognised the difficulty of further refining the EIPPCB approach and of finding a consensus during the WGC Kick-off Meeting. It was therefore decided to proceed with the discussions on the KEI candidates by using the EIPPCB approach as a starting point and by complementing it with the expertise of the TWG for each specific KEI candidate.

6.2.2 Groups of substances with certain characteristics

Some groups of substances with certain characteristics were proposed as KEIs by a MS that makes use of this grouping in its general binding rules used for setting permit conditions. In the IPs, some TWG members were in favour of grouping CMR substances as a KEI group; and fewer TWG members suggested grouping other harmful substances and non-CMR halogenated organic compounds as KEI groups.

In the BP, the groups of substances with certain characteristics were assessed in a similar manner. The environmental relevance, except for CMR substances, significance of the activities and availability of data vary depending on the substance belonging to the group. Moreover, substances differ considerably in their physico-chemical properties and consequently different abatement techniques are used to reduce their emissions. There is no standard monitoring method available to measure the substance groups in their entirety, e.g. a toxicity test for CMR substances.

No comments were provided by the TWG on the EIPPCB KoM proposals; therefore the following conclusions were reached by the TWG:

- Not to include CMR substances as a KEI group.
- Not to include more harmful organic substances as a KEI group.
- Not to include non-CMR halogenated organic compounds as a KEI group.

6.2.3 European Air Quality Standards substances

6.2.3.1 Overview

In the BP, the EIPPCB had assessed all substances for which European Air Quality Standards have been set, with the exception of ozone, which is rarely emitted directly by industrial processes.

6.2.3.2 Nitrogen oxides (NO_X)

In their IPs, the TWG members had agreed to include nitrogen oxides as a KEI.

The item was not discussed, but the proposal of the BP was amended according to the decisions taken for channelled emissions (see Section 2.1.2).

Conclusion reached by the TWG:

- To include nitrogen oxides (NO_X) as a KEI.

6.2.3.3 Dust

In their IPs, the TWG members had agreed to include dust as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusions reached by the TWG:

- To include dust as a KEI.
- To collect data on total dust.
- To collect data on PM_{10} and $PM_{2.5}$ (if available).

6.2.3.4 Sulphur oxides

In their IPs, the TWG members had agreed to include sulphur oxides as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- To include sulphur oxides (SO_X) as a KEI.

6.2.3.5 Carbon monoxide (CO)

In the BP, the EIPPCB had proposed to include carbon monoxide as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several MSs supported the EIPPCB KoM proposal while suggesting minor editorial changes.
- One industry organisation stated that CO should not be a KEI because there was little room for improvement and because reducing CO emissions from combustion processes would cause an increase in NO_X emissions which are more harmful than CO emissions. Referring to decisions taken in other BREFs (e.g. LVOC and LCP), the organisation indicated that if emissions levels were derived for CO, they should only be indicative.

After considering all the arguments, the TWG decided:

- To include carbon monoxide as a KEI.
- To decide at a later stage of the drawing up of the WGC BREF whether or not BAT-AEPLs will be set.

6.2.3.6 Benzene

In the BP, the EIPPCB had proposed to include benzene as a KEI. At the meeting, the TWG had no further comments.

Conclusion reached by the TWG:

➢ To include benzene as a KEI.

6.2.3.7 Lead and its compounds (as Pb)

In the BP, the EIPPCB had proposed to include lead and its compounds as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO supported the EIPPCB KoM proposal.
- Two industry organisations stated that lead should not be a KEI because chemical industry emissions represented less than 1 % of all industrial emissions, the use of lead as a PVC stabiliser was being phased out, other uses were also being phased out and emissions in Germany were less than 1 kg/yr.

After considering all the arguments, the TWG decided:

➢ To include lead and its compounds as a KEI.

6.2.3.8 Nickel and its compounds (as Ni)

In the BP, the EIPPCB had proposed to include nickel and its compounds as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several industry organisations stated that nickel should not be a KEI because it did not fulfil the environmental relevance criterion, emissions would be included in the parameter dust and there were no specific techniques to remove nickel from waste gases.
- One MS supported the EIPPCB KoM proposal because nickel was a CMR substance, there were a lot of data available for the chemical industry and nickel-containing dusts would be handled differently to dust containing less harmful substances. One MS considered that the case for including nickel as a KEI was stronger than for lead, which had already been included; nickel should thus be included as well.

After considering all the arguments, the TWG decided:

➢ To include nickel and its compounds as a KEI.

6.2.3.9 Arsenic and its compounds (as As)

In their IPs, the TWG members had agreed not to include arsenic and its compounds as a KEI.

The item was not proposed for discussion. Prior to the meeting, one MS and the environmental NGO had asked for the subject to be discussed so it was put on the agenda. However, the MS and the environmental NGO withdrew their request at a later stage of the meeting. Therefore, the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to include arsenic and its compounds as a KEI.

6.2.3.10 Cadmium and its compounds (as Cd)

In the BP, the EIPPCB had proposed not to include cadmium and its compounds as a KEI.

The main issues raised during the TWG discussions were as follows:

- One MS and the environmental NGO stated that cadmium should be included as a KEI because there was one site in Europe releasing over 12 kg per year so the figure in the VCI report of 0.16 kg/yr in Germany looked erroneous. Moreover, they argued that cadmium is a priority hazardous substance for releases to water.
- Two industry organisations supported the EIPPCB KoM proposal because if there was only one site in Europe with significant emissions, then a BREF would not be the appropriate mechanism to reduce emissions.

After considering all the arguments, the TWG decided:

- Not to include cadmium and its compounds as a KEI.

6.2.3.11 Polycyclic aromatic hydrocarbons (PAHs)

In the BP, the EIPPCB had proposed not to include PAHs as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO stated that PAHs should be included as a KEI because the E-PRTR data showed two chemical facilities that accounted for 22 % of all industrial releases, so releases were significant, there were data available and there were likely to be more facilities with emissions below the E-PRTR threshold.
- One industry organisation supported the EIPPCB KoM proposal because there were only two data points available from 50 000 measurements. Therefore the data availability criterion was not met and, in any case, PAHs would be included in the parameter TVOC.

After considering all the arguments taking into account the low data availability on PAHs, the TWG decided:

- Not to include polycyclic aromatic hydrocarbons as a KEI.

6.2.4 Stockholm Convention substances

6.2.4.1 Overview

In the BP, the EIPPCB had assessed chemicals listed in Annex C to the Stockholm Convention including polychlorinated dibenzo-*p*-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), polychlorinated biphenyls (PCBs) and hexachlorobenzene (HCB).

PCBs had not been considered a KEI candidate, because releases to air were not reported through the E-PRTR for the chemical industry.

6.2.4.2 PCDD/Fs (dioxins + furans)

In the BP, the EIPPCB had proposed that PCDD/Fs and dioxin-like PCBs should be a KEI group, except for the emissions for which BAT-AEPLs have been set during the review of the LVOC BREF, and to collect data as international toxic equivalent (I-TEQ) and WHO toxic equivalent (WHO-TEQ), if available.

The main issues raised during the TWG discussions were as follows:

- One industry organisation proposed not to include PCDD/Fs and dioxin-like PCBs as a KEI group since the emission concentrations and loads of the chemical sector were very low.
- One MS however remarked that, during the review of the LVOC BREF, the data collection on thermal oxidisers used for the treatment of chlorinated organic compounds provided sufficient data to set BAT-AELs. Similar data could be expected from other sectors of the chemical industry, where relevant.

After considering all the arguments, the TWG decided:

- ➢ To include PCDD/Fs and dioxin-like PCBs as a KEI group.
- ➢ To collect data as international toxic equivalent (I-TEQ) and WHO toxic equivalent (WHO-TEQ), if available.

6.2.4.3 Hexachlorobenzene (HCB)

In the BP, the EIPPCB had proposed not to include HCB as a KEI.

The main issues raised during the TWG discussions were as follows:

- The environmental NGO and two MSs considered that, despite the low availability of data points, the environmental relevance of HCB was high enough to justify its inclusion as a KEI.
- One industry organisation stressed that only 3 sites out of 9 000 chemical sites in Europe reported data to the E-PRTR. This would not be enough data to derive a BAT-AEL. Furthermore, the EU emissions inventory showed a 94 % reduction since 1999.
- Many MSs supported the EIPPCB KoM proposal, for the sake of consistency with the decision taken on PAHs. One MS recalled that the Stockholm Convention is implemented through the POP Regulation, which contains provisions to reduce the

emissions of persistent organic pollutants. Therefore, the issue might not need to be addressed in the WGC BREF.

After considering all the arguments, the TWG decided:

➢ Not to include hexachlorobenzene as a KEI.

6.2.5 The Minamata Convention on Mercury

In the BP, the EIPPCB had proposed not to include mercury and its compounds as a KEI. The issue was originally not proposed for discussion, but was added to the agenda following the request of one MS and the environmental NGO.

The main issues raised during the TWG discussions were as follows:

- Some MSs and the environmental NGO wondered why it was proposed not to include mercury and its compounds as a KEI when the three criteria of environmental relevance, significance of the activities and availability of data were met. One MS was particularly concerned that some installations might not be covered by the Minamata Convention or the CAK BREF.
- The EIPPCB clarified that, according to Regulation EU 2017/852 on mercury[1], the phase-out of mercury would start in December 2017 and end in 2022 with the exception of the production of sodium or potassium methylate or ethylate, which would be phased out by 2028. Taking into account the measures of the Regulation, the EIPPCB explained that it was very unlikely that the WGC BREF would significantly improve the level of environmental protection. Almost all of the E-PRTR installations that were cited by one MS were actually chlor-alkali plants that were covered by the Regulation.

After considering all the arguments, the TWG decided:

➢ Not to include mercury and its compounds as a KEI.

6.2.6 Greenhouse gases

6.2.6.1 Overview

In the BP, the EIPPCB had assessed all substances listed as greenhouse gases in the EU ETS Directive (2003/87/EC) whilst recognising that Article 9(1) of the IED means that, in practice, the WGC BREF could only set BAT-AELs for installations that are not listed in Annex I to Directive 2003/87/EC and so are not covered by the emissions trading scheme.

[1] REGULATION (EU) 2017/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2017 on mercury, and repealing Regulation (EC) No 1102/2008.

6.2.6.2 Carbon dioxide (CO_2)

In their IPs, the TWG members had agreed that carbon dioxide should not be a KEI.

The item was not proposed for discussion. Prior to the meeting, the environmental NGO had asked for the subject to be discussed so it was put on the agenda. However, the environmental NGO withdrew its request at a later stage of the meeting. Therefore, the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

➢ Not to include carbon dioxide as a KEI.

6.2.6.3 Nitrous oxide (N_2O)

In the BP, the EIPPCB had proposed to include nitrous oxide as a KEI except for emissions from activities covered by Annex I to Directive 2003/87/EC on the EU ETS.

The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO proposed to delete the second part of the proposal 'except for….' so that the data collection would include installations covered by the EU ETS. They argued that larger sample sizes might ease the setting of BAT-AELs, that BREFs could be used for setting benchmarks within the ETS, that new techniques to reduce N_2O emissions had become available and with the fact that N_2O emissions from nitric acid production were included in the LVIC-AAF.
- Several industry organisations supported the original wording because they saw it as double regulation to bring EU ETS installations within the scope of the WGC BREF. Fertilisers Europe stated that their industry had achieved a 90 % reduction in N_2O emissions over the last 10 to 15 years.

After considering all the arguments, the TWG decided:

➢ To include nitrous oxide as a KEI.

6.2.6.4 Methane (CH_4)

In the BP, the EIPPCB had proposed not to include methane as a KEI.

Conclusion reached by the TWG:

➢ Not to include methane as a KEI.

6.2.6.5 Hydrofluorocarbons (HFCs)

In the BP, the EIPPCB had proposed not to include HFCs as a KEI group.

Conclusion reached by the TWG:

➢ Not to include hydrofluorocarbons as a KEI group.

6.2.6.6 Perfluorocarbons (PFCs)

In the BP, the EIPPCB had proposed not to include PFCs as a KEI group.
The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO suggested collecting data on PFCs despite the fact that the E-PRTR only listed emissions from five or six chemical facilities. Their main argument was that PFCs are found in drinking water and soil.
- Several MSs agreed with the EIPPCB KoM proposal.
- One industry organisation agreed with the EIPPCB KoM proposal and was not in favour of widening the scope of the WGC BREF based on concerns about the presence of substances in the wider environment.

After considering all the arguments, the TWG decided:

➢ Not to include PFCs as a KEI group.

6.2.6.7 Sulphur hexafluoride (SF_6)

In the BP, the EIPPCB had proposed not to include sulphur hexafluoride as a KEI.

Conclusion reached by the TWG:

➢ Not to include sulphur hexafluoride as a KEI.

6.2.7 Ozone-depleting substances (ODS)

6.2.7.1 ODS other than tetrachloromethane

In the BP, the EIPPCB had assessed ODS controlled by Regulation (EC) No 1005/2009. The Regulation contains two derogations that are relevant for the WGC BREF: the use of controlled substances as feedstock for chemical processes (Article 7) and as process agents (Article 8).

The main issues raised during the TWG discussions were as follows:

- The environmental NGO requested to exchange information on the substitution of ODS as process agents and on the monitoring of ODS emissions, particularly in those processes where ODS are still in use.
- One industry organisation explained that activities using ODS as process agents needed a license and operated under strict conditions. Those plants had been exempted because they were able to comply with these conditions and limited their emissions.
- DG ENV highlighted the importance of differentiating between the different ODS and the processes given the different backgrounds. Information on possible substitution of ODS is available in public reports. Unlike feedstock uses, process agent uses are only approved by the bodies of the Montreal Protocol where no feasible alternative is available and emissions are limited.

After considering all the arguments, the TWG decided:

➢ Not to include chlorofluorocarbons as a KEI group.

- Not to include hydrochlorofluorocarbons as a KEI group.
- Not to include halons as a KEI group.
- Not to include 1,1,1-trichloroethane as a KEI.

6.2.7.2 Tetrachloromethane

In the case of tetrachloromethane, the EIPPCB had proposed to include the substance as a KEI, mainly because, unlike the other ODS, this substance remains important in the EU and globally. Controlled substances were produced in 2015 almost exclusively for feedstock use inside the EU or as an unintended by-product which is subsequently destroyed.

One industry organisation did not support its inclusion as a KEI considering that two thirds of the emissions to air reported in the E-PRTR were caused by only three facilities.

Two MSs and the environmental NGO supported the EIPPCB KoM proposal because the emissions to air reported in the E-PRTR were considered relevant and significant.

After considering all the arguments, the TWG decided:

- To include tetrachloromethane as a KEI.

6.2.8 Other organic substances

6.2.8.1 TVOC

In their IPs, the TWG members had agreed to include TVOC as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusions reached by the TWG:

- To include TVOC as a KEI.
- To collect NMVOC data where TVOC data are not available.

6.2.8.2 Formaldehyde

In the BP, the EIPPCB had proposed to include formaldehyde as a KEI.

The main issues raised during the TWG discussions were as follows:

- One MS recommended also collecting information on monitoring methods, as the experience from the review of other BREFs showed that different methods can lead to different numerical values.
- One industrial organisation proposed not to include formaldehyde as a KEI, because this substance was not of high environmental relevance in their view. According to the Formacare newsletter of October 2013, 64 % of the emissions come from natural sources, where industrial emissions account for less than 1 %. Therefore, setting a BAT-AEL would not improve the overall air quality. Moreover, the majority of the industrial emissions are already covered by the LVOC BREF, so there should be no need to regulate this substance further as it is more of an indoor air quality issue.

- Several MSs and the environmental NGO supported the EIPCCB proposal, considering that the criteria of environmental relevance, significance and likely availability of data were met for formaldehyde.

After considering all the arguments, the TWG decided:

➢ To include formaldehyde as a KEI.

6.2.8.3 Vinyl chloride monomer (VCM)

In the BP, the EIPPCB had proposed to include VCM as a KEI.

The main issues raised during the TWG discussions were as follows:

- One industry organisation remarked that the majority of VCM emissions were covered by the LVOC BREF and that it was more an issue of health in the workplace. The remaining part is more specifically linked to the production of polymers.
- Several MSs echoed that emissions of VCM were particularly relevant for the production of polymers (e.g. PVC).

After considering all the arguments, the TWG decided:

➢ To include vinyl chloride monomer as a KEI.
➢ To consider this KEI specific to the polymers sector.

6.2.8.4 Ethylene dichloride (EDC; 1,2-dichloroethane)

In the BP, the EIPPCB had proposed to include EDC should as a KEI.

The main issues raised during the TWG discussions were as follows:

- One industry organisation remarked that, similarly to VCM emissions, the majority of EDC emissions were covered by the LVOC BREF. The remaining part is more specifically linked to the production of pharmaceutical products.
- One MS added that other processes (e.g. amine production) also used EDC and not only the pharmaceutical sector.

After considering all the arguments, the TWG decided:

➢ To include ethylene dichloride as a KEI.

6.2.8.5 Chloromethane

In the BP, the EIPPCB had proposed to include chloromethane as a KEI.

The main issues raised during the TWG discussions were as follows:

- One industry organisation proposed not to include chloromethane as a KEI because this substance was not of high environmental relevance in their view. According to their data, emissions from non-anthropogenic sources were significantly higher than from anthropogenic sources. Therefore this would not leave much room for improvement.
- One MS shared the information that six industrial sites nationally reported emissions of 200 t/yr in 2015 and therefore supported the inclusion of chloromethane as a KEI.

After considering all the arguments, the TWG decided:

➢ To include chloromethane as a KEI.

6.2.8.6 Dichloromethane

In the BP, the EIPPCB had proposed to include dichloromethane as a KEI.

Based on the decision taken on chloromethane, the conclusion reached by the TWG was:

➢ To include dichloromethane as a KEI.

6.2.8.7 Trichloromethane

In the BP, the EIPPCB had proposed to include trichloromethane as a KEI.

Based on the decision taken on chloromethane, the conclusion reached by the TWG was:

➢ To include trichloromethane as a KEI.

6.2.8.8 Trichloroethylene

In the BP, the EIPPCB had proposed not to include trichloroethylene as a KEI.

The main issues raised during the TWG discussions were as follows:

- One industry organisation indicated that only one plant still produced this substance. The data availability criterion was thus not met; therefore this substance should not be included as a KEI.
- One MS and the environmental NGO argued that there would be many more installations below the E-PRTR threshold, and therefore this substance should be included as a KEI.

After considering all the arguments taking into account the low data availability on trichloroethylene, the TWG decided:

➢ Not to include trichloroethylene as a KEI.

6.2.8.9 Tetrachloroethylene

In the BP, the EIPPCB had proposed not to include tetrachloroethylene as a KEI.

The item was not proposed for discussion. Prior to the meeting, one MS and the environmental NGO had asked for the subject to be discussed so it was put on the agenda. However, the MS and the environmental NGO withdrew their request at a later stage of the meeting. Therefore, the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to include tetrachloroethylene as a KEI.

6.2.8.10 Di-(2-ethylhexyl) phthalate (DEHP)

In the BP, the EIPPCB had proposed not to include DEHP as a KEI.

One industry organisation added that this substance was regulated under REACH, resulting in a 98 % reduction of its use over 7 years. Therefore setting a BAT-AEL would not improve the air quality.

After considering all the arguments, the TWG decided:

- Not to include di-(2-ethylhexyl) phthalate as a KEI.

6.2.8.11 Ethylene oxide (EO)

In the BP, the EIPPCB had proposed to include ethylene oxide as a KEI.

The main issues raised during the TWG discussions were as follows:

- One industry organisation reported that emissions of EO from chemical installations were not significant as they were generally lower than the E-PRTR threshold (1 000 kg/yr). For example, one major producer reported emissions of 50 kg/yr in the case of EO production and of less than 1.0 kg/yr in the case of polyol production. EO was thus proposed not to be included as a KEI in order to have a manageable workload for the WGC BREF and because the LVOC BREF already dealt with this substance.
- One MS indicated that no BAT-AEL was set for this specific substance in the LVOC BREF because the dataset was not sufficiently robust. The LVOC BREF only intended to cover ethylene oxide emissions from ethylene oxide production through the TVOC parameter.

After considering all the arguments, the TWG decided:

- To include ethylene oxide as a KEI.

6.2.8.12 Propylene oxide

In the BP, the EIPPCB had proposed to include propylene oxide as a KEI.

The main issues raised during the TWG discussions were as follows:

- One MS explained that this substance was included in the LVOC BREF when co-produced with styrene monomer. There is however no specific chapter on propylene oxide production in the LVOC BREF.
- The chemical industry indicated that, similarly to ethylene oxide, the production of propylene oxide was of less relevance.
- The EIPPCB however remarked that this substance was still used in many chemical processes.

After considering all the arguments, the TWG decided:

➢ To include propylene oxide as a KEI.

6.2.8.13 Toluene

In the BP, the EIPPCB had proposed to include toluene as a KEI.

The main issues raised during the TWG discussions were as follows:

- One industry organisation indicated that toluene was regulated under REACH (e.g. use for the production of adhesives and in spray paints) as it leads to ground-level ozone formation. In this regard, toluene was a typical VOC that should not be a KEI by itself but should be included in the TVOC parameter. Moreover, the common techniques (e.g. thermal oxidiser) already achieved very good abatement of toluene emissions.
- One MS supported the inclusion of toluene as a KEI since it was widely used in the chemical industry and was particularly relevant for diffuse emissions. Moreover, not all common abatement techniques could destroy toluene (e.g. scrubber).

After considering all the arguments, the TWG decided:

➢ To include toluene as a KEI.

6.2.8.14 Naphthalene

In the BP, the EIPPCB had proposed not to include naphthalene as a KEI.

The item was not proposed for discussion. Prior to the meeting, the environmental NGO had asked for the subject to be discussed so it was put on the agenda. However, the environmental NGO withdrew its request at a later stage of the meeting. Therefore, the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

➢ Not to include naphthalene as a KEI.

6.2.8.15 Phenol

In the BP, the EIPPCB had proposed not to include phenol as a KEI.

The item was not proposed for discussion. Prior to the meeting, one MS and the environmental NGO had asked for the subject to be discussed so it was put on the agenda. However, the MS and the environmental NGO withdrew their request at a later stage of the meeting. Therefore, the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to include phenol as a KEI.

6.2.8.16 Acetic acid

In the BP, the EIPPCB had proposed not to include acetic acid as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to include acetic acid as a KEI.

6.2.8.17 Methanol

In the BP, the EIPPCB had proposed not to include methanol as a KEI. The issue was originally not proposed for discussion, but was added to the agenda following the request of one MS.

The main issues raised during the TWG discussions were as follows:

- Several MSs argued for the inclusion of methanol as a KEI on the basis that it is a widely used chemical. Even though methanol was not a CMR substance, it still had acute toxic properties and was particularly relevant for diffuse emissions. Data should be available.
- Several other MSs argued that the environmental relevance of methanol emissions should be considered low.
- Since methanol was not a particular issue during the LVOC BREF review, one industry organisation did not support the proposal and considered that methanol emissions could be dealt with in the TVOC parameter.

After considering all the arguments, the TWG decided:

- Not to include methanol as a KEI.

The TWG will seek to exchange further information on methanol during the drawing up of the WGC BREF.

6.2.8.18 1,3-Butadiene

Although this substance had been proposed as a KEI by FR in its IP, 1,3-butadiene was by mistake not assessed in the BP. The issue was therefore discussed.

The main issues raised during the TWG discussions were as follows:

- On the basis of the FR assessment concerning 1,3-butadiene, the EIPPCB considered that this substance was of high relevance due to its CMR properties, especially for diffuse emissions, of high significance (with an emission of 75.5 tonnes reported in France in 2015), and that the availability of data was at least medium as there were already eight chemical sites in France declaring emissions.
- Many MSs supported the inclusion of the substance as a KEI, especially for diffuse emissions. Some MSs indicated that data were available in their respective countries as well.
- One industry organisation did not support the inclusion of 1,3-butadiene as a KEI due to the low availability of data and the late submission of the information.

After considering all the arguments, the TWG decided:

➢ To include 1,3-butadiene as a KEI.

6.2.9 Other gases

6.2.9.1 Ammonia (NH_3)

In their IPs, the TWG members had agreed to include ammonia as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

➢ To include ammonia as a KEI.

6.2.9.2 Halogens and their compounds

In the BP, the EIPPCB had proposed not to include halogens and their compounds as a KEI.

Conclusion reached by the TWG:

➢ Not to include halogens and their compounds as a KEI.

6.2.9.3 Gaseous chlorides (expressed as HCl)

In the BP, the EIPPCB had proposed to include gaseous chlorides as a KEI group.

The main issues raised during the TWG discussions were as follows:

- One MS suggested that the data should be expressed as chloride ion (Cl^-) to avoid confusion with chlorine.
- One industry organisation stated that using Cl^- would be inconsistent with the wording used in the LVOC BREF, which is 'gaseous chlorides expressed as HCl', and that some data would only be available as hydrogen chloride (HCl) and not as gaseous chlorides.

The EIPPCB proposed to amend the title and conclusion according to the name of the measurement method (i.e. EN 1911:2010) and to add a new conclusion.

After considering all the arguments, the TWG decided:

- To include gaseous chlorides as a KEI group, which will include hydrogen chloride.
- To collect HCl data where gaseous chloride data are not available.

6.2.9.4 Elementary chlorine (Cl_2)

In the BP, the EIPPCB had proposed to include chlorine as a KEI. The TWG agreed and amended the wording to 'elementary chlorine' for clarity.

Conclusion reached by the TWG:

- To include elementary chlorine as a KEI.

6.2.9.5 Gaseous fluorides (expressed as HF)

In the BP, the EIPPCB had proposed to include gaseous fluorides as a KEI.

The main issues raised during the TWG discussions were as follows:

- One MS questioned why elementary chlorine had been proposed as a KEI, but not elementary fluorine. The response from another MS was that the monitoring method measured fluorides and converted fluorine to hydrogen fluoride so only total fluorides could be recorded. One industry organisation added that elementary fluorine was only relevant in specific cases.
- One industry organisation stated that fluorides should not be a KEI because the E-PRTR data showed that the chemical industry only generated 0.7 % of the industrial emissions.

The EIPPCB argued that the share of the chemical industry in the E-PRTR for emissions of fluorine and inorganic compounds (as total F) accounted for 2.2 % and 4.3 % in 2014 and 2015, respectively. The discrepancy in the data was then further assessed and it turned out that some of the air emission data in the E-PRTR had been erroneously reported for the parameter fluorides (as total F) which is related to emissions to water.

The EIPPCB proposed to amend the title and conclusion according to the name of the measurement method (i.e. ISO 15713:2006).

After considering all the arguments, the TWG decided:

➢ To include gaseous fluorides as a KEI group (which will include hydrogen fluoride).

6.2.9.6 Hydrogen bromide (HBr)

In the BP, the EIPPCB had proposed not to include hydrogen bromide as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO were in favour of including HBr as a KEI because data were available, particularly from the organic fine chemical industry, and because there was a BAT-AEL in the current OFC BREF.
- Several MSs and one industry organisation supported the EIPPCB view that emissions to air from the chemical industry were low and that there would be limited data available (3 data sets out of 50 000 in the VCI study).

After considering all the arguments, the TWG decided:

➢ Not to include hydrogen bromide as a KEI.

6.2.9.7 Hydrogen sulphide (H_2S)

In the BP, the EIPPCB had proposed not to include hydrogen sulphide as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several MSs indicated that hydrogen sulphide emissions were particularly relevant for viscose production.
- Two MSs and two industry organisations did not support the inclusion of H_2S as a KEI.
- One industry organisation referred to its one-page document where H_2S was assessed as not being a KEI according to 14 different criteria.

After considering all the arguments, the TWG decided:

➢ To include hydrogen sulphide as a KEI only for viscose production.

6.2.9.8 Carbon disulphide (CS_2)

In the BP, the EIPPCB had proposed not to include carbon disulphide as a KEI.

The main issues raised during the TWG discussions were as follows:

- Several TWG members supported the inclusion of this substance as a KEI, for consistency with the decision taken on hydrogen sulphide.
- Two MSs and the chemical industry did not support the inclusion of CS_2 as a KEI.

After considering all the arguments, the TWG decided:

- To include carbon disulphide as a KEI only for viscose production.

6.2.9.9 Hydrogen cyanide (HCN)

In the BP, the EIPPCB had proposed to include hydrogen cyanide as a KEI.

The main issues raised during the TWG discussions were as follows:

- The chemical industry reported that 75 % of emissions came from only three sites. The front-loading showed that there were only a limited number of data points. Moreover, monitoring methods were based on national standards that might not be comparable.
- Several MSs supported the inclusion of hydrogen cyanide as a KEI, as the criteria of environmental relevance, significance of activities and availability of data were met.

After considering all the arguments, the TWG decided:

- To include hydrogen cyanide as a KEI.

6.2.10 Other metals

6.2.10.1 Metals class I (mercury and thallium) and their compounds

In the BP, the EIPPCB had proposed not to include metals class I as a KEI group.

The conclusion on mercury is reported in Section 6.2.5. After considering all the arguments taking into account the low data availability on thallium, the TWG decided:

- Not to include metals class I (mercury and thallium) and their compounds as a KEI group.

6.2.10.2 Metals class II (cobalt, selenium, tellurium) and their compounds

In the BP, the EIPPCB had proposed not to include metals class II as a KEI group. The TWG agreed and amended the wording to remove lead and nickel, since the TWG had previously decided to include lead and nickel and their compounds as KEIs.

Conclusion reached by the TWG:

- Not to include metals class II (cobalt, selenium, tellurium) and their compounds as a KEI group.

6.2.10.3 Metals class III (antimony, chromium, copper, manganese, vanadium, tin) and their compounds

In the BP, the EIPPCB had proposed not to include metals class III as a KEI group.

After considering all the arguments taking into account the low data availability on these metals, the TWG decided:

- Not to include metals class III (antimony, chromium, copper, manganese, vanadium, tin) and their compounds as a KEI group.

6.2.10.4 Zinc and its compounds (as Zn)

In the BP, the EIPPCB had proposed not to include zinc and its compounds as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to include zinc and its compounds as a KEI.

6.2.11 Phosphates

In the BP, the EIPPCB had proposed not to include phosphates as a KEI.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to include phosphates as a KEI.

6.2.12 Other proposals for KEIs to be included

6.2.12.1 Acrylonitrile

In the BP, the EIPPCB had proposed to include acrylonitrile as a KEI.

The main issues raised during the TWG discussions were as follows:

- One MS remarked that acrylonitrile was a large volume organic compound and that it had not been considered a KEI in the LVOC BREF. Therefore, this substance should not be included as a KEI in the WGC BREF either. The MS was supported by one industry organisation who argued that the likely availability of data was low (e.g. no data in the VCI study, and only 11 data points in the UBA(DE) study, of which 6 were below the limit of detection).

After considering all the arguments, the TWG decided:

- Not to include acrylonitrile as a KEI.

6.2.12.2 Amines and isocyanates

In the BP, the EIPPCB had proposed not to include amines and isocyanates as KEIs.

The items were not discussed; the EIPPCB KoM proposals remained unchanged.

Conclusion reached by the TWG:

- Not to include amines and isocyanates as KEIs.

6.3 Identification of relevant mass flows

In the BP, the EIPPCB had considered setting emission thresholds for the KEIs, in order to avoid collecting data from minor emission sources.

The main issues raised during the TWG discussions were as follows:

- Several MSs and the environmental NGO were not in favour of specifying emission thresholds for the data collection because:
  - it might be appropriate to set thresholds as applicability conditions when BAT-AELs would apply, but not for the data collection;
  - the use of thresholds is relevant for implementation but is not relevant for the data collection;
  - there is ambiguity as to whether the thresholds apply prior to abatement, to abated emissions or to unabated emissions;
  - small installations could be excluded from the data collection;
  - well-performing plants using process-integrated techniques and achieving low pollutant loads might end up being excluded.

These TWG members agreed that the first bullet point of the EIPPCB KoM proposal should be retained and that the other bullet points should be deleted.

- A few MSs and some industry organisations supported all bullet points of the EIPPCB KoM proposal because:
  - it would make the data collection more manageable – data from the 20 % of plants that generate 80 % of emissions are usually sufficient;
  - some emissions could be considered insignificant;
  - mass thresholds would be useful for defining which batch plants should provide data;
  - without emission thresholds there may be inconsistencies in the data from different MSs.

The EIPPCB recognised that there was no consensus on applying thresholds prior to the data collection. The EIPPCB therefore proposed to retain only the first bullet point of the proposal and this was accepted by the TWG.

After considering all the arguments, the TWG decided:

- To organise the data collection in a way that ensures that relevant emission sources are covered.

Given that it was concluded not to set emission thresholds prior to the data collection, the meeting did not discuss the list of emission thresholds in the E-PRTR and MS legislation that was listed in the BP.

7 DATA COLLECTION

7.1 Overview

The main purpose of the WGC data collection is to provide a sound basis for setting BAT and BAT-AE(P)Ls for the KEIs identified. For that purpose, the WGC TWG discussed and agreed on a number of elements of relevance for the data collection.

7.2 NO_X emission data collected during the LVOC BREF review

In their IPs, the TWG members had broadly agreed not to use the data on NO_X emissions from thermal oxidisers that were collected during the LVOC BREF review.

The item was not discussed; the EIPPCB KoM proposal remained unchanged.

Conclusion reached by the TWG:

- Not to use the data on NO_X emissions from thermal oxidisers that were collected during the LVOC BREF review and instead to collect a new set of data.

7.3 Environmental performance levels

7.3.1 Expression of BAT-AEPLs in concentrations

The issue had not originally been proposed for discussion in the BP. However, the initial proposal needed to be revisited in light of the conclusions taken on the scope, particularly concerning diffuse emissions. Moreover, two MSs had asked prior to the meeting to put the issue on the agenda.

In the case of diffuse emissions, and for channelled emissions from batch processes, one MS proposed to consider expressing BAT-AEPLs as loads or specific loads. As this proposal received little support, the MS proposed to express BAT-AEPLs for channelled emissions in concentrations and for diffuse emissions in loads. Another MS proposed to express BAT-AEPLs also in other ways (e.g. as solvent losses, waste catalyst generated). One industry organisation proposed to express BAT-AEPLs for diffuse emissions as specific loads (i.e. as g/tonne produced).

One TWG member asked to change the wording so that BAT-AEPLs are systematically expressed at least in concentrations, and, if appropriate, coupled with abatement efficiencies. One MS emphasised however the need to collect information on the abatement efficiency in the data collection as this parameter is useful for the data assessment.

After considering all the arguments, the TWG decided:

- To generally express BAT-AEPLs for channelled emissions to air in concentrations, if deemed appropriate coupled with abatement efficiencies.
- If appropriate, to express BAT-AEPLs in the case of diffuse emissions as loads or solvent losses for example.
- To consider specifying emission threshold conditions expressed as mass flow rates (e.g. in g/h or kg/h) in combination with BAT-AEPLs.

7.3.2 Averaging periods for BAT-AEPLs

In the BP, the EIPPCB had proposed to express BAT-AEPLs for emissions to air as short-term averages. The opinion of the TWG members expressed in their IPs was divided mainly because of concerns over batch production processes and the preference of some members to express BAT-AEPLs as long-term averages.

One MS proposed to include a combination of averaging periods based on daily and/or yearly averages. However, several MSs and the environmental NGO considered this proposal too broad, as measurements were typically carried out on a short-term basis. One industry organisation, supported by two MSs, indicated that, in any case, the averaging period should reflect the information collected.

One industry organisation added that, in many MSs, the permits included the possibility to use calculation, estimation and sampling instead of measurement and this should be reflected in the KoM conclusion. However, several MSs proposed to keep the EIPPCB KoM proposal as it was, considering that it already allowed enough flexibility, and to only differentiate between channelled and diffuse emissions in the KoM conclusion.

After considering all the arguments, the TWG decided:

- To *generally* express BAT-AEPLs for channelled emissions to air as short-term averages (i.e. as an average over the sampling period in the case of periodic measurements or as a daily average in the case of continuous measurement). In the case of batch production, to consider the emission profile (fluctuation over time) when deciding on the averaging periods of the BAT-AEPLs.
- If appropriate, to decide on averaging periods for diffuse emissions after the data collection.

7.4 Grouping of substances and differentiation within groups of substances

In the call for IPs, TWG members were asked to express their views on which substances could be grouped together to simplify the data collection and to set BAT-AEPLs for groups of substances. TWG members were also asked to provide their views on whether and how BAT-AELs should be differentiated for certain groups of substances due to their toxicity. Most IPs agreed with the use of well-established groups of substances (dust, NO_X, SO_X, gaseous chloride, gaseous fluoride, lead and its compounds, nickel and its compounds, PCDD/Fs and TVOC). In all other cases, the opinion was divided.

One MS proposed to amend the second part of the EIPPCB KoM proposal and only keep the objective to collect data on individual substances. Other TWG members asked for clarification on the information that was expected when collecting data on the composition and the toxicity of the compounds included in the parameters dust and TVOC.

The EIPPCB clarified that some MSs have more stringent or specific requirements for certain types of dust or VOC emissions due to their toxicity. The objective is to collect information in this regard to understand the specificities of some emission levels.

Taking into account that the well-established groups of substances were discussed along with the other KEIs (see Section 6.2), two MSs proposed to remove the first part of the EIPPCB KoM proposal and retain only the dust and TVOC. The TWG broadly followed this proposal.

After considering all the arguments, the TWG decided:

- To collect data on the characteristics of the compounds included in the parameters dust and TVOC and to decide at a later stage of the drawing up of the WGC BREF if (and how) differentiated BAT-AEPLs should be set.

7.5 Questionnaire for gathering data and information

In the call for IPs, TWG members were asked to provide their views on the collection of data and information via plant-specific questionnaires. The views expressed addressed the process for developing the questionnaires, their content and format, the process for collecting data via questionnaires, and the quality assurance of the data collected.

Concerning the preparation of the draft questionnaire, one industry organisation proposed to set up a subgroup for the questionnaire development. Two MSs did not support this proposal because of the extra work this would imply for the TWG. The EIPPCB reflected that setting up a subgroup for drafting the questionnaire(s) might indeed add complexity since it would require a particular mandate, the nomination of the subgroup's members, and reporting to the entire TWG. The initial proposal to develop the questionnaire within the whole TWG was therefore kept.

Several industry organisations raised concerns about the selection of well-performing plants, the questionnaire quality checks and the submission of the questionnaires by the MSs. They emphasised the need to ensure that all information provided would be made available to the EIPPCB and be used to derive BAT and BAT-AELs. In particular, they asked to include in the proposal the possibility for industry to submit questionnaires.

Based on the experience of previous BREFs, one MS, supported by two others, stressed the need for all questionnaires submitted to the EIPPCB to be checked beforehand by the MSs. One MS, supported by some other MSs, suggested making this clear in the decisions of this meeting.

The EIPPCB suggested amending the proposal so that the distribution of the final questionnaire template(s) is realised 'in cooperation with third parties', in order to reflect the cooperation of national industries or NGOs with MSs in the data collection process including in the selection of well-performing plants. The EIPPCB added that, in all cases, the filled-in questionnaires have to be submitted to the MS for a quality check. For that reason, it was not deemed necessary to specify further who is responsible for uploading the filled-in questionnaire onto BATIS. One industry association highlighted the fact that those industry members that participate in the TWG should not be considered third parties but members of the TWG.

A number of other suggestions for information to be collected were broadly agreed by the TWG, for example on the plant context, diffuse emissions and emission limit values in the permit.

After considering all the arguments, the TWG decided:

- To follow the established BREF process for the collection of plant/installation-specific data via questionnaires including the following:
  - the preparation of the draft questionnaire by the EIPPCB followed by the commenting of the whole TWG, if necessary in several iterations;
  - the organisation of a questionnaire development workshop to finalise the questionnaire;
  - the testing of the draft final questionnaire by a selected (small) number of plants/installations;
  - the preparation of the final questionnaire by the EIPPCB;
  - the distribution of the final questionnaire by Member States' representatives in cooperation with third parties to the participating plants/installations;
  - the filling in of the questionnaires by the plants/installations;

- the collection of the filled-in questionnaires by Member States' representatives;
- the quality check of the filled-in questionnaires by Member States' representatives (possibly with the help of a checklist that the TWG/EIPPCB could have developed);
- the submission of the quality-checked questionnaires to the TWG via BATIS.

AT, DE, ES, FR, IT, NL and PL did not support the decision to add 'in cooperation with third parties' to the bullet point 'the distribution of the final questionnaire by Member States' representatives' and the decision not to clearly indicate in the last bullet point that the final submission of the questionnaires onto BATIS has to be done by MS representatives.

- To collect information via questionnaire, *inter alia*, on the following:
  - the context of the plant (e.g. subsectors/products/processes, production capacity, feedstock);
  - the origin of the waste gas stream (i.e. sources);
  - the characteristics of the waste gas stream (e.g. flow rate, pollutant load, presence of substances that may interfere with the waste gas treatment technique/system) and/or diffuse emissions;
  - the waste gas treatment technologies and the way they are designed, built, maintained and operated;
  - cross-media effects related to the use of waste gas treatment techniques (e.g. NO_X emissions from the use of thermal oxidisers);
  - the emission levels in concentrations (e.g. minimum/maximum values, averages, percentiles, emission profiles) and emission limit values in the permit;
  - the abatement efficiency of the waste gas treatment techniques;
  - the monitoring (e.g. analytical methods, frequency, sampling period, averaging period);
  - the relevant reference conditions (e.g. oxygen content, humidity, temperature, flow rate) for the abated/unabated emissions;
  - the plant/process conditions (e.g. normal or other than normal operating conditions, percentage of capacity at which the plant/process is operating, number of operating hours per year, continuous or batch production).

- To design the questionnaire to target individual emission points (including from shared waste gas treatments).
- To design the questionnaire to target diffuse emissions.

7.6 Confidentiality issues

In the BP, the initial proposal was to design the questionnaire in a way that avoids requesting confidential data. This proposal received broad support from the TWG.

One MS suggested the TWG to agree on which data are confidential when drafting the questionnaire, and stressed that MSs should not individually decide whether data are confidential or not. One industry organisation answered that this issue could be discussed and decided during the questionnaire development, if needed.

Another MS proposed that, when performing the quality check of the filled-in questionnaires, the MSs should also check that the confidential and non-confidential data have been appropriately reported, according to the decisions taken by the TWG on confidential information. This could be expressed in the proposal by adding that the filled-in questionnaire version including confidential data will be sent to the Member State to validate the confidentiality claims. This proposal was supported by some MSs.

The environmental NGO requested that confidentiality claims be assessed according to criteria defined by the TWG. The approach used for the review of the STS BREF was cited as an example.

One industry organisation expressed concerns that voluntarily provided confidential information might fall under the Aarhus Convention, and could have to be made available if requested to the competent authority.

After considering all the arguments, the TWG decided:

- To design the questionnaire in a way that avoids requesting confidential data so that all data provided by operators can be posted directly onto BATIS. If the TWG agrees during the questionnaire development that confidential data are exceptionally necessary in the case of some specific subsectors/products/processes, the corresponding cells in the questionnaire will be marked with a different background colour. The questionnaire version including confidential data will be sent to the concerned Member State to validate the confidentiality claims, and then submitted directly to the EIPPCB and not posted onto BATIS.

CEFIC did not support the decision that the concerned MS validates the confidentiality claims.

7.7 Other proposals for the data collection

The EIPPCB KoM proposal to organise a workshop on data evaluation remained unchanged. Some TWG members underlined that they understood that this would mean holding a face-to-face workshop.

Conclusion reached by the TWG:

- To organise a workshop on data evaluation.

7.8 Selection of plants/installations for data collection

Discussions at the KoM
In the IPs, several MSs had proposed chemical installations for the plant-specific data collection.

In the BP, the EIPPCB had proposed deadlines for:

- TWG members to complete their proposals of well-performing plants/installations to be included in the data collection; and
- the EIPPCB to consolidate the proposals into a list and to check its completeness.

The EIPPCB explained the purpose of the completeness check. The idea is to check in advance of the data collection whether the list is likely to be comprehensive and representative (e.g. in terms of plant sizes, batch versus continuous processes, KEIs). If needed, the MSs could be asked to add additional installations to fill potential gaps in the data collection.

The EIPPCB will request additional information from the TWG for a number of criteria, such as:

- type of subsector/product/process;
- plant type: batch/continuous production; data on emission/waste gas streams: waste gas treatment systems, KEIs addressed and pollutant load.

UK stated that it would be useful to know in advance what type of information would be needed from MSs. The conclusions reached by the TWG were:

- [*"TWG members to complete their proposals of plants/installations operating well-performing waste gas treatment systems (including best-performing waste gas treatment systems) to be included in the data collection."* This conclusions was deleted at the Interim Meeting – see below.]
- ["*EIPPCB to finalise the list and to check its completeness. This might imply further requests for information to individual TWG members."* This conclusions was deleted at the Interim Meeting – see below.]

Discussions at the IM
During the second day of the Interim Meeting the TWG discussed the draft questionnaire for the data collection and a number of other data collection issues including the next steps and deadlines. DE proposed that the EIPPCB should not compile a single list of plants/installations operating well-performing waste gas treatment systems and this was agreed by the TWG. The revised conclusions reached by the TWG were:

- To delete the following conclusions taken during the KoM:

  - TWG members to complete their proposals of plants/installations operating well-performing waste gas treatment systems (including best-performing waste gas treatment systems) to be included in the data collection.
  - EIPPCB to finalise the list and to check its completeness. This might imply further requests for information to individual TWG members.

The agreed timetable for TWG actions following the KoM can be found in Section 9. The updated timetable following the IM can be found in Section 10.

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

In the IPs, four emerging techniques were proposed by the TWG.

In the BP, the EIPPCB had proposed deadlines for:

- TWG members to review the information on emerging techniques and to complete the proposals of BAT candidates and emerging techniques; and
- the EIPPCB to consolidate the proposals into a list.

In the discussion, two MSs proposed to widen the proposal to review the information on emerging techniques and editorial changes for the nominated techniques were proposed.

The EIPPCB explained the purpose of the list of BAT candidates and emerging techniques: to use them for the design of the questionnaire (e.g. drop-down menus).

Conclusions reached by the TWG:

- As a start, to include in the information collection the following techniques as potential BAT candidates:
  - low-NO_X and ultra-low-NO_X burners;
  - catalytic filtration, e.g. using micro pollutant membranes;
  - adsorption modules, e.g. using SPC modules;
  - fuel gas systems burning hydrocarbon by-products.
- As a starting point, to review the information on emerging techniques in the existing chemical BREFs:
  - TWG members to supply a list of candidate BAT and emerging techniques for the design of the questionnaire;
  - EIPPCB to consolidate the list of candidate BAT and emerging techniques and to supply a list of candidate BAT and emerging techniques for the design of the questionnaire;
  - TWG members to supply information on candidate BAT and emerging techniques using the standard 10-heading format.

The agreed timetable for TWG actions following the KoM can be found in Section 9. The updated timetable following the IM can be found in Section 10.

9 ACTIONS TO BE TAKEN AFTER THE KICK-OFF MEETING

During the final session of the Kick-off Meeting, the TWG agreed on the following actions and tentative timetable for the remainder of 2017.

Date	Subject	Action
6-9 November 2017	Site visits in Belgium and Germany organised by CEFIC	TWG members to inform CEFIC by 30 September if they wish to attend
Not specified	Further site visits	TWG to consider if further site visits would be beneficial to the development of the WGC BREF
Early November 2017	Kick-off meeting report	EIPPCB to send the draft KoM report to the TWG
Mid-November 2017		TWG to provide the EIPPCB with comments on the draft KoM report
Early December 2017		EIPPCB to issue the final KoM report
24 October 2017	Complementary worksheets for the data collection	TWG members to complete the information provided on subsectors/products/processes that may require complementary worksheets to the generic questionnaire
20 November 2017		EIPPCB to deliver the assessments on process furnaces/heaters and subsectors/products/processes that may necessitate complementary worksheets to the generic questionnaire
8 December 2017		TWG members to provide feedback on the EIPPCB assessments
19-20 December 2017	Article 13 Forum	EIPPCB to inform the IED Article 13 Forum about the progress on the WGC BREF
December 2017	Information on diffuse emissions	To be provided by: Sweden, Germany, CEFIC, Italy, Belgium and France

The EIPPCB listed the actions that it expected to be carried out in 2018, without specifying any dates because the schedule would depend on the outcome of the IED Article 13 Forum meeting in December 2017. These actions had been discussed at various moments during the meeting.

- TWG members to provide proposals of well-performing plants/installations for the data collection.
- TWG members to supply a list of BAT candidates and emerging techniques for the design of the questionnaire.
- EIPPCB to consolidate the list of well-performing plants/installations for the data collection and to check their completeness.
- EIPPCB to consolidate the list of BAT candidates and emerging techniques for the design of the questionnaire.
- TWG members to supply detailed information on BAT candidates and emerging techniques using the standard 10-heading format.
- EIPPCB to issue the draft questionnaire.

- Review and commenting on the draft questionnaire.
- Workshop to finalise the questionnaire.
- EIPPCB to issue the final questionnaire for filling-in.
- Submission of filled-in questionnaires after a careful quality check.
- Workshop on data evaluation.

10 ACTIONS TO BE TAKEN AFTER THE INTERIM MEETING

During the final session of the Interim Meeting, the TWG agreed on the following actions and tentative timetable for the remainder of 2018.

Date	Subject	Action
As soon as possible	Bulk information	TWG members to submit bulk information to the EIPPCB by posting the information onto BATIS.
16 March 2018	Well-performing plants for the data collection	EIPPCB to supply an Excel-template to collect information on well-performing plants. TWG can use the Excel-template to collect data if they wish to do so.
27 July 2018		TWG Members can upload their list of plants onto BATIS, if they wish to do so, preferably before the questionnaire is issued on 27/07/2018.
30 March 2018	Questionnaire	EIPPCB to issue 2nd draft questionnaire.
11 May 2018		TWG to review and comment on 2nd draft questionnaire.
8 June 2018		EIPPCB to issue final draft questionnaire.
6 July 2018		Testing by selected installations and feedback.
27 July 2018		EIPPCB to issue questionnaire.
21 December 2018		TWG to return filled-in questionnaire after careful quality checking by Member States.
11 May 2018	BAT candidates	TWG to supply **a list of additional BAT candidates for the design of the questionnaire**, with the name of the technique and a brief description.
8 June 2018		EIPPCB to consolidate the list of BAT candidates and emerging techniques for the design of the questionnaire.
21 December 2018		TWG to provide **detailed information on BAT candidates and emerging techniques** using the standard 10-heading format for drafting D1.