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Circular Economy and Sustainable Industry (JRC.B.5)
European Bureau for Research on Industrial Transformation and Emissions (EU-BRITE)

Seville, 1 October 2026
JRC.B.5/EU-BRITE

KICK-OFF MEETING

FOR THE DRAWING UP OF THE

BEST AVAILABLE TECHNIQUES (BAT) REFERENCE DOCUMENT FOR THE PRODUCTION OF BATTERIES IN GIGAFACTORIES (PBG BREF)

Hybrid meeting, 15 – 17 June 2026

MEETING REPORT

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ACRONYMS

General acronyms – Definitions

Acronym/term used	Meaning/definition
BAT	Best Available Technique(s) (as defined in Article 3(10) of the IED)
BAT-AEL	Emission level associated with the BAT (as defined in Article 3(13) of the IED)
BAT-AEPL	BAT-associated environmental performance level (as defined in Article 3(13a) of the IED)
BATIS	BAT information system, accessible at https://bureau-industrial-transformation.jrc.ec.europa.eu/batis/
Benchmarks	'Benchmarks' means the indicative range of environmental performance levels associated with best available techniques, which is to be used as a reference in the EMS (as defined in Article 3(13b) of the IED)
BP	Background paper
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
CBI	Confidential Business Information
CRM	Critical raw materials
D1	First draft
ELV	Emission limit value
EMS	Environmental Management System
Environmental performance	The 'environmental performance' means the performance with regard to consumption levels, resource efficiency concerning materials, water and energy resources, the reuse of materials and water, and to waste generation, as defined in Article 3(13aa) of the IED
ET	'Emerging technique' means a novel technique for an industrial activity that, if commercially developed, could provide either a higher general level of protection of human health and the environment or at least the same level of protection of human health and the environment and higher cost savings than existing best available techniques (as defined in Article 3(14) of the IED)
ET-AELs	'Emission levels associated with emerging techniques' means the range of emission levels obtained under normal operating conditions using an emerging technique or a combination of emerging techniques, as described in BAT conclusions, expressed as an average over a given period of time, under specified reference conditions (as defined in Article 3(48) of the IED)
ET-AEPLs	'Environmental performance levels associated with emerging techniques' means the range of environmental performance levels, obtained under normal operating conditions, using an emerging technique or a combination of emerging techniques as described in BAT conclusions (as defined in Article 3(49) of the IED)
EU	European Union
EU-BRITE	European Bureau for Research on Industrial Transformation and Emissions (formerly EIPPCB)

Acronym/term used	Meaning/definition
IED	Directive 2010/75/EU, as amended by Directive (EU) 2024/1785 of the European Parliament and the European Council of 24 April 2024, on industrial and livestock rearing emissions (integrated pollution prevention and control)
INCITE	European Innovation Centre for Industrial Transformation and Emissions
IS BREF	Best Available Techniques (BAT) Reference Document for Iron and Steel Production (2013)
KEI	Key environmental issue (for the drawing up of this BREF)
KoM	Kick-off Meeting
LCP BREF	Best Available Techniques (BAT) Reference Document for Large Combustion Plants (2017)
MCP Directive	Directive (EU) 2015/2193 of the European Parliament and of the Council of 25 November 2015 on the limitation of emissions of certain pollutants into the air from medium combustion plants
MS	Member State (of the European Union)
NFM BREF	Best Available Techniques (BAT) Reference Document for the Non-Ferrous Metals Industries (2017)
NGO	Non-governmental organisation
OTNOC	Other than normal operating conditions
STM BREF	Best Available Techniques (BAT) Reference Document for Surface Treatment of Metals and Plastics (in review process)
SF BREF	Best Available Techniques (BAT) Reference Document for Smitheries and Foundries (2024)
TWG	Technical Working Group
WT	Best Available Techniques (BAT) Reference Document for Waste Treatment
WWTP	Waste water treatment plant

Chemical symbols

Symbol	Chemical element/metal
Al	Aluminium
As	Arsenic
Co	Cobalt
Cr	Chromium
Cu	Copper
Fe	Iron
Hg	Mercury
Li	Lithium
Mn	Manganese
Na	Sodium
Ni	Nickel
Pb	Lead
Sb	Antimony
Se	Selenium
Sn	Tin
Zn	Zinc

Substances, groups of substances and parameters

Symbol	Chemical element/metal
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Chemical oxygen demand
HOI	Hydrocarbon oil index
$LiPF_6$	Lithium hexafluorophosphate
Na_2SO_4	Sodium sulphate
NMP	N-Methyl-2-pyrrolidone
NH_3	Ammonia
NH_4^+	Ammonium
NO_X	Nitrogen oxides
PBDEs	Polybrominated diphenyl ethers
PFAS	Per- and polyfluoroalkyl substances
SO_4^{2-}	Sulphates
SO_X	Sulphur oxides
SO_4^{2-}	Sulphates
TN	Total nitrogen
TP	Total phosphorus
TSS	Total suspended solids
VOC	Volatile organic compound (as defined in Article 3(45) of the IED)

Participants in the Kick-off Meeting

Acronym	Meaning
Member States	
AT	Austria
BE	Belgium
BG	Bulgaria
CZ	Czechia
DE	Germany
ES	Spain
EL	Greece
HU	Hungary
FI	Finland
FR	France
IE	Ireland
IT	Italy
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SK	Slovakia
Other countries	
NO	Norway
Environmental non-governmental organisation	
EEB	European Environmental Bureau
Industry associations	
CEFIC	European Chemical Industry Council
EUROBAT	European Automotive and Industrial Battery Manufacturers
EPBA	Consumer Batteries Europe
RECHARGE	European Industry Association for Advanced Rechargeable and Lithium Battery Manufacturers
Other agency	
ECHA	European Chemicals Agency
European Commission	
DG ENV	Directorate-General for Environment
JRC – EU-BRITE	Joint Research Centre – EU-BRITE

A total of 78 participants attended the meeting (33 in person and 45 online), representing EU Member States and Norway, industry, an environmental NGO, the European Chemicals Agency (ECHA) and services of the Commission.

1 INTRODUCTION

1.1 Kick-off Meeting for the drawing up of the PBG BREF

Table 1-1 Agenda items for the PBG KoM.

Agenda of Day 1 - Items
Introduction to the meeting: welcome, meetings rules
Introductory presentation DG ENV
Introductory presentation EU-BRITE - The Sevilla process
Introductory presentation EU-BRITE - Agenda, Overview of the work already carried out on the PBG process - Structure of the meeting
Scope of the PBG BREF: Types of batteries to be covered
Scope of the PBG BREF: Independently operated WWTP and combined treatment of waste water
Scope of the PBG BREF: Interface with other BREFs and the MCP directive
Emissions to air: Characteristics of channeled emissions to air
Emissions to air: Dust
Emissions to air: Metals/metalloids - Al, Co, Cu, Li, Mn, Ni, Pb, Zn
Emissions to air: Organics - TVOC, NMP
Emissions to air: Acid/Alkali I - NH3, HF, Sulphuric acid mist
Emissions to air: Acid/Alkali II - NOX, SOX
Agenda of Day 2 - Items
Emissions to air: Additional parameters (if there are more which are proposed) & Summary - Additional item - PFASs
Diffuse emissions to air /Additional items proposed for discussion by the TWG (diffuse emissions of NMP)
Emissions to water: waste water characteristics and waste water treatment techniques
Emissions to water: General parameters I - COD, TOC, TSS,
Emissions to water: General parameters II - TN, TP, fluorides
Emissions to water: specific parameters I - VOC, NMP, PBDEs, PFAS
Emissions to water: Metals - As, Co, Cu, Cr, Fe, Hg, Li, Mn, Na, Ni, Pb, Sb, Zn
Emissions to water: Alkali/acids parameters - Sodium sulphate (Na2SO4), sulphates (SO42-), and Na.
Lithium hexafluorophosphate (LiPF6), Ammonia (NH3) and ammonium (NH4+)"
Emissions to water: Additional parameters proposed for discussion by the TWG (Tin (Sn))
Substitution of chemicals used in batteries manufacturing
Agenda of Day 3 - Items
Energy consumption
Water consumption and waste water treatment
Circular economy
CBI - DE additional item - BEST and CBI
Additional topics proposed for discussion by the TWG – (Decarbonisation)
Next steps/Site visits
INCITE
Information point - Product Policy Analysis
Introduction to BATIS
KoM conclusions
Closure of the meeting

This document summarises the discussions at the KoM and presents all conclusions reached by the TWG. It does not list or repeat all interventions but instead provides a synthetic overview of the arguments put forward by TWG members to conclude on the proposals made by EU-BRITE.

2 INTRODUCTORY PRESENTATIONS

The Chair of the KoM opened the meeting and welcomed the TWG members. Following a short presentation on meeting rules, a representative of the Directorate-General for Environment of the European Commission (DG ENV) gave a presentation first introducing the legal context and framework considering the adoption of the revised IED. The presentation recalled the importance of BAT conclusions as the key outcome of the process.

EU-BRITE gave a general introduction to the *Sevilla process* for drawing up and reviewing BREFs. The presentation highlighted the approach to derive BAT, as well as BAT-associated emission levels (BAT-AELs) and BAT-associated environmental performance levels (BAT-AEPLs) and/or benchmarks, which is a pragmatic and iterative process involving the whole TWG. In this process, EU-BRITE's responsibility is to make concrete proposals on BAT, BAT-AELs and BAT-AEPLs and/or benchmarks to the whole TWG based on the information collected, especially based on the data collected through questionnaires. The TWG is invited to comment on these proposals and to submit any evidence supporting alternative proposals. Decisions on BAT (including on BAT-AELs and BAT AEPLs and/or benchmarks) as well as ET (including ET-AELs and ET-AEPLs) are taken by consensus by the whole TWG at the Final Meeting.

In addition, EU-BRITE recalled the meeting rules for both in-person participants and online attendees of this hybrid meeting and explained the general format of the KoM and the organisation of the discussion. It was recalled that the duration of the exchange of information should not exceed four years, in line with the IED.

The work of the PBG TWG will follow the BREF Guidance for the exchange of information under the IED. It should be noted that the BREF Guidance ([1]), following the revision of the IED, was under revision at the time of the KoM.

([1]) Commission Implementing Decision 2012/119/EU

3 SCOPE OF THE PBG BREF

3.1 Types of batteries to be covered

In BP Section 3.1.1, EU-BRITE proposed the following:

- To include in the PBG BREF the manufacturing of lithium-based batteries, other than exclusively assembling, with a production capacity above the threshold in point 2.7 of Annex I to the IED, and the following types:
    1. Lithium Iron Phosphate (LFP);
    2. Lithium Nickel Manganese Cobalt Oxide (NMC);
    3. Lithium Nickel Cobalt Aluminium Oxide (NCA);
    4. Lithium Titanate (LTO);
    5. Lithium Cobalt Oxide (LCO);
    6. Lithium Manganese Oxide (LMO);
    7. Solid-state.

- To include the manufacturing of sodium-ion, lead-acid, NiMH and alkaline batteries, other than exclusively assembling, with a production capacity above the threshold in point 2.7 of Annex I to the IED.

The TWG agreed in general with the proposal, but some TWG members noted that the closed list of lithium-based chemistries proposed would leave some existing or future chemistries out of the scope (for instance lithium-sulphur batteries or lithium-manganese-iron-phosphate). It was agreed to keep the list of lithium-based chemistries open, mentioning some of them as an example only.

Many delegations were concerned about the availability of sufficient data regarding some types of batteries, given the reduced number of installations within the scope of this BREF currently operating in the EU. One MS proposed to collect data from installations at pre-operational stages (this could include, for instance, environmental impact assessments or information from environmental permits already issued). It was decided to create a subgroup of the TWG to collect and analyse the information from environmental permits for lithium-based and sodium-based battery manufacturing installations (see Section 13.1 of the KoM report).

Some TWG members requested to exclude NiMH batteries from the scope, as there seem to be no battery manufacturing plants of this type in Europe and because this technology is now very old. It was however agreed to keep the NiMH type in the scope to confirm the absence of installations of this type.

Some TWG members requested clarifications regarding some of the terms used in the definition of activity 2.7 of the IED, namely the boundary between manufacturing and assembly, the production capacity in relation to the threshold of 15 000 tonnes per year (t/y) (whether this limit includes the scrap materials) and the term ‘capsule’. It was noted however that interpretation of the IED is not within the remit of the TWG.

The TWG noted that battery categorisation as defined in the Batteries Regulation[2] should be considered when developing the questionnaire, in addition to other factors like the battery chemistry.

Conclusions reached by the TWG:

- To include in the PBG BREF the manufacturing, other than exclusively assembling, of the following types of batteries, with a production capacity equal to or above the threshold in point 2.7 of Annex I to the IED:
    1. lithium-based (e.g. LFP, NMC, solid-state),
    2. sodium-based,
    3. lead-acid,
    4. NiMH,
    5. alkaline.

3.2 Independently operated WWTP and combined treatment of waste water

In BP Section 3.1.2, EU-BRITE proposed the following:

- To include in the scope of the PBG BREF the activity in point 6.11 of Annex I to the IED (Independently operated treatment of waste water not covered by Directive 91/271/EEC) provided that the main pollutant load originates from activities in point 2.7 of Annex I to the IED.

- To cover in the scope of the PBG BREF the combined treatment of waste water from different origins if the main substance/parameter load originates from the activity covered in point 2.7 of Annex I to the IED and the waste water treatment plant (WWTP) is not covered by Directive 91/271/EEC.

The TWG agreed with the proposal, with minor modifications. Some TWG members raised the issue of how to determine the main pollutant load, suggesting that the questionnaire should follow the same approach as the one used for the STM BREF, with some fine-tuning based on lessons learnt during the development of the STM BREF.

Conclusions reached by the TWG:

- To include in the scope of the PBG BREF the activity in point 6.11 of Annex I to the IED (independently operated treatment of waste water not covered by Directive (EU) 2024/3019) provided that the main pollutant load originates from activity in point 2.7 of Annex I to the IED.
- To cover in the scope of the PBG BREF the combined treatment of waste water from different origins if the main substance/parameter load originates from the activity covered in point 2.7 of Annex I to the IED and the waste water treatment plant (WWTP) is not covered by Directive (EU) 2024/3019.

[2] Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC ELI: http://data.europa.eu/eli/reg/2023/1542/2025-07-31

3.3 Interface with other BREFs and the MCP Directive

3.3.1 Interface with the STS BREF

In BP Section 3.1.3, EU-BRITE proposed the following:

- To include processes like mixing, coating, drying, calendering and notching as core stages of batteries production.

The TWG agreed with the proposal with minor modifications.

Conclusion reached by the TWG:

- To include in the scope of the PBG BREF processes like mixing, coating, drying, calendering and notching as core stages of batteries production.

3.3.2 Interface with the SF BREF

In BP Section 3.1.3, EU-BRITE proposed the following:

- On the basis of the outcome of the scope discussion and in the event of inclusion of lead-acid batteries, to assess whether foundry processes are associated with the core PBG activities (i.e. in-house foundry process or outsourced).

The TWG discussed extensively the interface with the SF BREF. Recognising the technical difficulty of mapping all manufacturing processes involved in lead-acid battery manufacturing into the relevant BREFs, the TWG created an ad-hoc subgroup to deal with this issue.

On the third day of the KoM, the ad-hoc subgroup presented its findings and a proposal for the conclusion which was discussed in depth. After the exchanges, the TWG agreed to modify the EU-BRITE proposal and reached the following conclusion.

Conclusion reached by the TWG:

- Not to include in the PBG BREF the casting processes (e.g. grid casting, strap casting, core casting, ballast casting) and the associated metal melting in lead foundries producing lead-based batteries components as far as they concerns emissions to air and associated monitoring, as these processes are covered by the SF BREF.

In addition, the TWG agreed to include in the KoM report the following view expressed by the TWG members on the future review and interface of the SF and PBG BREFs:

'In line with the integrated approach of the IED and in order to ensure a level playing field for all lead-acid battery production covered by the IED, irrespective of whether the installations concerned fall under Annex I activities 2.5(b) or 2.7, foundries associated with lead-acid battery production should be excluded from the scope of the next review of the SF BREF and addressed in an integrated manner in the first review of the PBG BREF.'

3.3.3 Interface with chemical BREFs

In BP Section 3.1.3, EU-BRITE proposed the following:

- In the event of inclusion of lead-acid batteries production in the PBG BREF, not to consider for inclusion PbO production as it is covered under the CWW and WGC BREFs.
- To include the production of precursor cathode active materials (p-CAM) and cathode active materials (CAM) in the PBG BREF, provided that this is part of the core activities in PBG installations or could be considered a directly associated activity.

The proposal was the subject of detailed exchanges. Some TWG members argued that currently the production of PbO is mainly associated with battery production and therefore it should be covered by the PBG BREF. Furthermore, the production of PbO with the grade required by battery manufacturing could be not sufficiently covered by existing BREFs. On the other hand, some TWG members noted that the techniques involved in lead reduction are well known and regulated, and that the efforts of the TWG should be focused on processes not yet covered by existing BREFs. The final consensus of the TWG was to amend the proposal and include PbO production provided that it is part of the core activities.

A MS, with wide support from other delegations, proposed not to include the production of p-CAM and CAM in the PBG BREF, as there is no site in Europe producing these materials that would fall within the threshold, and because this process cannot be understood as part of the IED activity 2.7. The TWG decided to amend the EU-BRITE proposal accordingly.

Conclusions reached by the TWG:

- To include in the scope of the PBG BREF PbO production provided that it is part of the core activities in PBG installations.
- Not to include in the scope of the PBG BREF the stand-alone production of precursor cathode active materials (p-CAM) and cathode active materials (CAM).

3.3.4 Interface with the NFM BREF

In BP Section 3.1.3, EU-BRITE proposed the following:

- In the event of inclusion of lead-acid batteries production in the PBG BREF, not to consider the on-site recycling processes of end-of-life lead-acid batteries to the PBG installation as it is covered under the NFM BREF.
- To consider the inclusion of the production of GAM (graphite anode materials) in the PBG BREF in case this could be considered a directly associated activity.

The TWG agreed with the proposal with some modifications, as follows:

Conclusions reached by the TWG:

- Not to include in the scope of the PBG BREF the on-site recycling processes of end-of-life lead-acid batteries in the PBG installation as it is covered under the NFM BREF.
- To include in the scope of the PBG BREF the production of GAM (graphite anode materials) in case this could be considered a directly associated activity.

3.3.5 Interface with the LCP BREF and the MCPD

In BP Section 3.1.3, EU-BRITE proposed the following:

- Not to duplicate in the PBG BAT conclusions requirements related to combustion plants already in the LCP BAT conclusions and in the MCPD, and instead to cross-reference the relevant documents.

The TWG agreed with the proposal with minor modifications.

Conclusion reached by the TWG:

- Not to duplicate in the PBG BREF requirements related to combustion plants already in the LCP BAT conclusions and in the MCPD, and instead to cross-reference the relevant documents.

3.3.6 Interface with the STM BREF

In BP Section 3.1.3, EU-BRITE proposed the following:

- To include in the scope of the PBG BREF the surface treatment processes in lithium battery installations.

The TWG agreed with the proposal without modifications.

Conclusion reached by the TWG:

- To include in the scope of the PBG BREF the surface treatment processes in lithium battery installations.

3.3.7 Interface with the WT BREF

A MS requested to add the interface with the WT BREF, as this was not included in the EU-BRITE proposal.

The TWG agreed with the proposal. A conclusion was reached as follows:

Conclusion reached by the TWG:

- Not to include in the scope of the PBG BREF processes already covered in the WT BAT conclusions.

3.3.8 Other topics of discussion

During the discussions, DG ENV recalled that the main relevant activity for this TWG is activity 2.7 of Annex I to the IED, and that references to other BAT conclusions can be made as appropriate. Furthermore, consistency of the PBG BREF with the EU Batteries Regulation will be ensured.

4 KEY ENVIRONMENTAL ISSUES (KEI) FOR THE PBG BREF

4.1 Emissions to water

4.1.1 Waste water characteristics and waste water treatment techniques

In BP Section 3.2.2.1, EU-BRITE proposed the following:

- To collect information on the characteristics of emissions to water (pH, temperature, flow, conductivity) as well as other contextual information such as the type of discharge (direct or indirect), the associated processes and the exact point of monitoring associated with the emission data reported.
- To collect information on the techniques (including emerging techniques) used to remove/abate pollutants identified as KEIs.

The TWG generally agreed with the proposal. Several delegations suggested to improve the proposal by adding a reference to the collection of data and information on characteristics of emissions to water for the substances/parameters identified as KEIs. EU-BRITE explained that this type of detailed information on characteristics of emissions to water will be asked for during the questionnaire development phase. The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on the characteristics of emissions to water (pH, temperature, flow, conductivity) as well as other contextual information such as the type of discharge (direct or indirect), the associated processes and the exact point of monitoring associated with the emission data reported.
- To collect information on the techniques (including emerging techniques) used to remove/abate pollutants identified as KEIs.
- For the substances/parameters identified as KEIs, to collect data and information on the characteristics of their emissions, e.g. concentration, mass flow, monitoring (including LoQ, LoD, frequency, point of measurement, averaging periods), the abatement efficiency of the applied abatement technique(s).

4.1.2 Substances and parameters in emissions to water

The TWG generally agreed with the substances/parameters proposed by EU-BRITE, as outlined in Section 3.2.2 of the background paper. However, based on the discussion during the KoM, some adjustments were made to the list of substances/parameters proposed as KEIs. The main points arising from the discussions are presented in the following paragraphs.

Although chromium (Cr) was initially proposed as a KEI in the background paper, the TWG decided not to include it due to the lack of available data, as it is considered an impurity. Similarly, mercury (Hg), which was also proposed due to historical concerns in battery manufacturing, was deemed no longer relevant in modern battery technologies manufacturing. The TWG did, however, agree that it would be beneficial to collect available data and information on emissions of other metals/metalloids, such as arsenic (As) and cadmium (Cd), through the data collection process. The TWG will decide at a later stage which substances should be considered KEIs.

Lithium hexafluorophosphate ($LiPF_6$) was proposed as potentially relevant for lithium-based batteries, but the TWG noted that there are no available data. Given its relatively rapid hydrolysis, alternative parameters such as lithium, fluoride and total phosphorus could be considered. However, EEB did not support the exclusion of $LiPF_6$ as a KEI for lithium-based and sodium-based batteries.

Due to the lack of data available for sodium sulphate monitoring in lead-acid battery manufacturing, the TWG decided not to include sodium sulphate as a KEI. Instead, the TWG agreed to include sulphates, providing broader coverage of all sulphate-containing compounds.

Following the approach used in other BREFs, the TWG decided not to include ammonia as a KEI for emissions to water and instead to consider ammonium as a KEI for all battery types, as data appear to be available.

The TWG generally agreed to include PFAS as a KEI for lithium-based, sodium-based and NiMH batteries. The TWG will decide at a later stage, based on the data and information collected, if BAT-AELs may be derived and for which PFAS. However, CEFIC, RECHARGE, EPBA and EUROBAT did not support the inclusion of all PFAS as a KEI.

Table 4-1 summarises the conclusions reached during the KoM discussions for substances/parameters relevant for emissions to water. **Table 4-2** presents a summary of substances/parameters that are considered KEIs or for which substances/parameters data and information will be collected for each battery type.

Table 4-1 - KoM conclusions on KEIs for emissions to water by substance/parameter

Substances/ parameter	KoM conclusion
COD	To include chemical oxygen demand (COD), total organic carbon (TOC), and total suspended solids (TSS) as KEIs for all battery types.
TOC	
TSS	
TN	To include total nitrogen (TN) in water as a KEI for all battery types.
TP	To include total phosphorus (TP) in water as a KEI for lithium-based, lead-acid and sodium-based batteries.
Fluorides	To include fluorides in water as a KEI for lithium-based and sodium-based batteries.
VOCs	To collect data and information on volatile organic compounds (VOC) emissions for lithium-based batteries. The TWG to decide at a later stage whether BAT-AELs should be derived.
NMP	To include N-methyl pyrrolidone (NMP) as a KEI for lithium-based and sodium-based batteries.
PFAS	To include per-and polyfluoroalkyl substances (PFAS) as a KEI for lithium-based, sodium-based, and NiMH batteries. The TWG to decide at a later stage, based on the data and information collected, if BAT-AELs may be derived and for which PFAS.
Co	To include cobalt (Co) as a KEI for all types of batteries. To consider in the data collection the origin of Co emissions (e.g. ferric chloride used in waste water treatment).
Cu	To include copper (Cu) as a KEI for NiMH and sodium-based batteries.
Cr	Not to include chromium (Cr) as a KEI for any battery types.

Substances/ parameter	KoM conclusion
Li	To include lithium (Li) as a KEI for lithium-based batteries.
Ni	To include nickel (Ni) as a KEI for lithium-based, sodium-based and NiMH batteries.
Zn	To include zinc (Zn) as a KEI for alkaline and lead-acid batteries.
Mn	To include manganese (Mn) as a KEI for lithium-based, sodium-based and alkaline batteries.
Pb	To include lead (Pb) as a KEI for lead-acid batteries.
Sb	To include antimony (Sb) as a KEI for lead-acid batteries.
Fe	To include iron (Fe) as a KEI for lithium-based and sodium-based batteries.
Sn	To include tin (Sn) as a KEI for lead-acid batteries.
SO_4^{2-}	To include sulphates (SO_4^{2-}) as a KEI for lead-acid and sodium-based batteries.
Na	To include sodium (Na) as a KEI for sodium-based batteries.
NH_4^+	To include ammonium (NH_4^+) as a KEI for all battery types.
Hg	Not to include mercury (Hg) as a KEI.
Na_2SO_4	Not to include sodium sulphate (Na_2SO_4) as a KEI.
$LiPF_6$	Not to include lithium hexafluorophosphate ($LiPF_6$) as a KEI.
NH_3	Not to include ammonia (NH_3) as a KEI.
Other metals/metalloids	To collect available data and information on emissions of other metals/metalloids through the data collection (e.g. arsenic (As), cadmium (Cd)). The TWG to decide at a later stage which substances should be considered as KEIs.

Table 4-2 - Summary table of substances/parameters to be considered KEIs or for which to collect data and information for each battery type

Substances/parameters	Battery type				
	Lithium-based	Lead-acid	NiMH	Alkaline	Sodium-based
COD	X	X	X	X	X
TOC	X	X	X	X	X
TSS	X	X	X	X	X
TN	X	X	X	X	X
TP	X	X			X
Fluorides	X				X
VOC	Y				
NMP	X				X
PFAS	X		X		X
As	Y	Y	Y	Y	Y
Cd	Y	Y	Y	Y	Y
Co	X	X	X	X	X
Cu			X		X
Li	X				
Ni	X		X		X

Substances/parameters	Battery type				
	Lithium-based	Lead-acid	NiMH	Alkaline	Sodium-based
Zn		X		X	
Mn	X			X	X
Pb		X			
Sb		X			
Fe	X				X
Sn		X			
SO_4^{2-}		X			X
Na					X
NH_4^+	X	X	X	X	X

X: To include as a KEI.
Y: To collect data and information. The TWG to decide at a later stage whether the substance/parameter should be considered as a KEI.

4.2 Emissions to air

4.2.1 Characteristics of and general information on channelled emissions to air

In BP Section 3.2.3.1, EU-BRITE proposed the following:

- To collect information on the waste gas characteristics (e.g. flow, temperature, O_2 content, humidity). To collect information on the mass flow of the pollutants identified as KEIs according to the type of installation.

The TWG generally agreed with the proposal. Several TWG members suggested to improve the proposal with additional points relating to the characteristics of emissions that will be collected for the substances/parameters identified as KEIs.

In particular, the need to collect data on the concentration aside from the mass flow was expressed by several TWG members. The abatement efficiency was also considered relevant information to be collected.

The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on the waste gas characteristics (e.g. volume flow, temperature, O_2 content, humidity).
- For the substances/parameters identified as KEIs, to collect data and information on the characteristics of the emissions to air, e.g. concentration, mass flow, monitoring (including LoQ, LoD, frequency, averaging periods), the abatement efficiency of the applied abatement technique(s).

4.2.2 Substances and parameters in channelled emissions to air

The TWG agreed in general with the substances/parameters proposed by EU-BRITE as outlined in Section 3.2.3 of the background paper. However, based on the discussion during the KoM, some adjustments were made to the list of substances/parameters proposed as KEIs.

In relation to specific metals/metalloids, the TWG pointed out that some of them may only be present as impurities.

During the discussions on organic parameters, one MS proposed TVOC as a relevant parameter in the permanent mould casting process of the foundry step in lead-acid battery manufacturing. For some other MS and one industry association, the related process that the emissions originate from was unclear. EU-BRITE explained that this issue may usually be addressed during the questionnaire development phase.

Broad consensus was reached in the TWG on a MS' proposal to include PFAS as a potentially relevant parameter in lithium-based battery manufacturing, although some concerns were raised regarding the current lack of standardised monitoring methods. However, the TWG acknowledged the recent dynamic situation for the development of such standardised monitoring methods.

As regards NH_3 emissions, it was pointed out that one lithium-based battery manufacturing installation uses a specific dry coating process. However, most of the lithium-based manufacturing installations apply the wet coating process. Therefore, the TWG agreed that it would be beneficial to collect available data and information on emissions of NH_3 in lithium-based battery manufacturing and it should be decided at a later stage whether NH_3 should be considered as a KEI.

As no sulphur-containing fuels are used, the TWG decided not to include SO_X as a KEI.

Table 4-3 summarises the conclusions reached during the KoM discussions for substances/parameters relevant for emissions to air. Table 4-4 presents a summary of substances/parameters that are considered KEIs or for which substances/parameters data and information will be collected for each battery type.

Table 4-3: KoM conclusions on KEIs for emissions to air by substance/parameter

Substances/ parameters		KoM conclusions	
Particulate matter and metals/metalloids	Dust	To include dust as a KEI for all battery types.	
	Al	To include aluminium (Al) as a KEI for sodium-based batteries.	In addition, to collect available data and information on emissions of other metals/metalloids through the data collection (e.g. As, Cd, Fe). The TWG to decide at a later stage whether the substance/parameter should be considered as a KEI.
	Co	To include cobalt (Co) as a KEI for lithium-based batteries.	
	Cu	To include copper (Cu) as a KEI for sodium-based batteries.	
	Li	To include lithium (Li) as a KEI for lithium-based batteries.	
	Mn	To include manganese (Mn) as a KEI for lithium-based, alkaline and sodium-based batteries.	
	Ni	To include nickel (Ni) as a KEI for lithium-based, NiMH and sodium-based batteries.	
	Pb	To include lead (Pb) as a KEI for lead-acid batteries.	
	Zn	To include zinc (Zn) as a KEI for alkaline batteries.	

Substances/ parameters		KoM conclusions
Organics	TVOC	To include TVOC as a KEI for lithium-based, lead-acid, alkaline and sodium-based batteries.
	NMP	To include NMP as a KEI for lithium-based and sodium-based batteries.
	PFAS	To collect available data and information on emissions of PFAS through the data collection. The TWG to decide at a later stage whether the substance/parameter should be considered as a KEI for lithium-based batteries.
Acid/ alkali	NH_3	To include ammonia (NH_3) as a KEI for NiMH batteries. To collect available data and information on emissions of NH_3 from lithium-based battery production plants through the data collection. The TWG to decide at a later stage whether the substance/parameter should be considered as a KEI.
	HF	To include hydrogen fluoride (HF) as a KEI for lithium-based and sodium-based batteries.
	Sulphuric acid mist	To include sulphuric acid mist as a KEI for lead-acid batteries.
	NO_X	To include nitrogen oxides (NO_X) as a KEI from combustion processes for all battery types.
	SO_X	Not to include sulphur oxides (SO_X) as a KEI.

Table 4-4: Summary table of substances/parameters to be considered KEIs or for which to collect data and information for emissions to air by battery type

Substances/parameters		KoM conclusions by battery type				
		Lithium-based	Lead-acid	NiMH	Alkaline	Sodium-based
Particulate matter and metals/metalloids (1)	Dust	X	X	X	X	X
	Al					X
	Co	X				
	Cu					X
	Li	X				
	Mn	X			X	X
	Ni	X		X		X
	Pb		X			
	Zn				X	
Organics	TVOC	X	X		X	X
	NMP	X				X
	PFAS	Y				
Acid/alkali	NH_3	Y		X		
	HF	X				X
	Sulphuric acid mist		X			
	NO_X from combustion processes	X	X	X	X	X

Substances/parameters	KoM conclusions by battery type				
	Lithium-based	Lead-acid	NiMH	Alkaline	Sodium-based
X: To include as a KEI in the PBG BREF. Y: To collect available data and information on emissions to air through the data collection. The TWG to decide at a later stage whether the substance/parameter should be considered as a KEI. ([1]) In addition, to collect available data and information on emissions of other metals/metalloids through the data collection (e.g. As, Cd, Fe). The TWG to decide at a later stage whether the substance/parameter should be considered as a KEI.					

4.2.3 Diffuse emissions to air

In BP Section 3.2.3.12, EU-BRITE proposed the following:

- To collect information on the potential sources of diffuse emissions in batteries manufacturing as well as information on techniques applied to reduce these emissions.

The TWG generally agreed with the proposal. However, based on the discussion during the KoM, various delegations highlighted the importance of diffuse emissions of NMP in lithium-based batteries manufacturing and presented their experience in the monitoring of such emissions. The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To collect information on the potential sources of diffuse emissions in batteries manufacturing as well as information on techniques applied to reduce these emissions.
- For NMP (N-methyl-2-pyrrolidone) in particular, to include diffuse emissions in lithium-based batteries manufacturing as a KEI and to collect data on emissions as well as on monitoring techniques (e.g. using the solvent management plan as in IED Annex VII, Part 7).

5 CONSUMPTION, ENERGY EFFICIENCY, WATER CONSUMPTION, CIRCULAR ECONOMY, DECARBONISATION

5.1 Raw materials (including chemicals) used in batteries manufacturing

In BP Sections 3.2.4.1 and 3.2.4.2, EU-BRITE proposed the following:

- Once the PBG BREF scope is agreed, the TWG to conclude on the inclusion of the relevant raw materials (including chemicals) efficiency aspects in the data collection process (through the questionnaire).

The TWG discussed extensively how to use available information and avoid duplication of data requests. A preliminary list of relevant substances prepared by ECHA, and shared through BATIS before the meeting, will be completed shortly after the KoM (and therefore could not be discussed). Several TWG members expressed doubts on how to use this list. Some TWG members proposed to hold a workshop to decide which substances should be considered relevant at a later stage. The questionnaire workshop could provide an opportunity for that discussion.

One MS noted that Article 6.1 of the Batteries Regulation sets limits for some chemicals and Article 6.5 requires operators to report on certain substances present in the final product or used during its manufacturing process. The TWG agreed that information from the Batteries Regulation should be used where possible to avoid duplication.

One MS noted that the term raw material usually refers to materials that are present in the final product; however, the considerations on the efficiency should also apply to other substances used in the process, even if not present in the final product.

Several TWG members emphasised the need for a focused approach targeting relevant raw materials and chemicals, applying lessons learnt from other BREFs and aiming to continuously improve the process.

Conclusions reached by the TWG:

- To include in the data collection process (through the questionnaire) efficiency aspects of the relevant raw materials and auxiliary materials (including chemicals).
- To use information and data collected under the Batteries Regulation requirements where possible to avoid duplications.

5.2 Substitution of chemicals used in batteries manufacturing

In BP Section 3.2.4.3, EU-BRITE proposed the following:

- To collect information on the substitution of hazardous chemicals (e.g. NMP, other VOCs, HF-forming electrolytes) with available or emerging alternatives (water-based binders, dry coating processes, innovative electrolytes) by battery type. To also collect information on best practices and technical/economic feasibility.

The TWG generally agreed with the proposal. Most of the comments of the TWG addressed the need to act in coordination with other legislative processes in place, in particular the Batteries Regulation and the REACH Regulation. The importance of fluid communication across different Commission services and EU agencies, and active participation of those involved, was emphasised.

Conclusions reached by the TWG:

- To collect information on the substitution of hazardous chemicals (e.g. NMP, other VOCs, HF-forming electrolytes) with available or emerging alternatives (e.g. water-based binders, dry coating processes, innovative electrolytes) by battery type. To also collect information on best practices and technical/economic feasibility.
- To use information and data collected under other initiatives (e.g. Batteries Regulation, REACH) where possible to avoid duplications.

5.3 Energy consumption

In BP Section 3.2.5, EU-BRITE proposed the following:

- To consider energy consumption as a KEI.
- To collect data and contextual information on energy consumption.
- The TWG to provide information on the availability of energy consumption data.
- To define the type of data (including the relevant contextual information such as level of aggregation of data, system boundaries, units) to be collected.
- To collect information on techniques/measures applied to increase energy efficiency.
- To decide at a later stage with the TWG, based on the data collected through the questionnaires, whether BAT-AEPLs and/or benchmarks on the consumption of energy should be derived.

The TWG generally agreed with the proposal. Some of the TWG's comments focused on how to enable a better comparison of the energy consumption of various types of battery manufacturing plants. Some TWG members also suggested that any possible BAT-AEPLs and/or benchmarks should be derived at process level.

The TWG also raised concerns about how to deal with confidential business information (CBI data). For instance, there are very few installations for some types of battery production and data collection could lead to the indirect identification of proprietary process configurations, technologies and operational practices, thereby exposing commercially sensitive information. EU-BRITE explained that its long-standing expertise in handling CBI, and that if data related to energy consumption were to be considered CBI, adequate tools and practices would be used to manage these data. The CBI topic is further addressed in Section 9.

Concerns were expressed about overlapping with other legislation, for example in relation to the Batteries Regulation, Carbon Footprint and EU ETS. EU-BRITE clarified that overlapping should be avoided.

The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To consider energy consumption as a KEI.
- To collect data and contextual information on energy consumption.
- The TWG to provide information on the availability of energy consumption data.
- To define the type of data (including the relevant contextual information such as level of aggregation of data, system boundaries, units) to be collected.
- To collect information on techniques/measures applied to increase energy efficiency.
- To decide at a later stage with the TWG, based on the data collected through the questionnaires, whether BAT-AEPLs (at process level) and/or benchmarks on the consumption of energy should be derived.

5.4 Water consumption and waste water discharge

In BP Section 3.2.6, EU-BRITE proposed the following:

- To consider specific water consumption and waste water discharge as a KEI.
- The TWG to provide information on availability of the data on water consumption and specific waste water discharge.
- The TWG to identify the contextual information needed to understand and compare the water consumption and waste water discharge data.
- The TWG to provide information on techniques/measures applied to reduce water consumption and waste water discharge.
- To identify the necessary contextual information (e.g. applied techniques, type of processes, product specifications, methods used for monitoring and calculation, plant configuration and boundaries defined, level of aggregation of consumption data).
- To collect information on techniques/measures applied to reduce water consumption and waste water discharge.
- To decide at a later stage with the TWG, based on the data collected through the questionnaires, whether BAT-AEPLs and/or benchmarks on the consumption should be derived.

The TWG generally agreed with the proposal. Several TWG members raised concerns on comparability across various types of battery manufacturing plants, and whether data would be needed at both plant and process level. The group agreed to amend the last bullet point in the proposal to specify ‘at process level’ in relation to BAT-AEPLs.

During the discussion, concerns were shared regarding the possible derivation of BAT-AEPLs and/or benchmarks for waste water discharge. It was suggested to consider waste water discharge as a KEI, and collect data and contextual information on waste water discharge, but not to aim at the derivation of BAT-AEPLs and/or benchmarks on waste water discharge, as this is not necessarily directly linked to process-related water use.

The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To consider specific water consumption and waste water discharge as a KEI.
- The TWG to provide information on the availability of data on water consumption and specific waste water discharge.
- The TWG to identify the contextual information needed to understand and compare the water consumption and waste water discharge data.
- The TWG to provide information on techniques/measures applied to reduce water consumption and waste water discharge.
- To identify the necessary contextual information (e.g. applied techniques, type of processes, product specifications, methods used for monitoring and calculation, plant configuration and boundaries defined, level of aggregation of consumption data).
- To decide at a later stage with the TWG, based on the data collected through the questionnaires, whether BAT-AEPLs (at process level) and/or benchmarks on water consumption should be derived.

5.5 Circular economy – Residues generation and management

In BP Section 3.2.7, EU-BRITE proposed the following:

- To include generation of residues/waste as a KEI.
- To collect data and contextual information on residue type, quantities, composition and management through plant-specific questionnaires (e.g. recovery, reuse, recycling, disposal).
- To collect information on techniques to promote circular economy in various processes of batteries production.
- To decide at a later stage with the TWG, based on the data collected through the plant specific questionnaires on generation of residues and other circular economy measures, whether any BAT-AEPLs and/or benchmarks should be derived.

The TWG generally agreed with the proposal. During the discussion, concerns were raised on the term used, i.e. 'residues/waste'. Based on the exchange, it was clarified that the term residue is to be understood as an umbrella term (i.e. broader term) which may include and cover both waste and by-products. In this regard, it was proposed to delete the term 'waste' in the first bullet point and to include generation of residues as a KEI (residues may include both waste and by-products). Moreover, EU-BRITE proposed to clarify terms used (e.g. residues, type of residues) during the questionnaire development.

Furthermore, various delegations' comments focused on the granularity of the data collection through the questionnaires and whether BAT-AEPLs and/or benchmarks should be derived at process level. The TWG agreed on a similar approach to energy and water consumption. EU-BRITE clarified that, during the questionnaire development, the collection of data and information both at plant and process level will be considered, which will enable the group to decide at a later stage on the derivation of any BAT-AEPLs and/or benchmarks.

The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To include generation of residues as a KEI.
- To collect data and contextual information on residue type, quantities, composition and management through plant-specific questionnaires (e.g. recovery, reuse, recycling, disposal).
- To collect information on techniques to promote circular economy in various processes of batteries production.
- To decide at a later stage with the TWG, based on the data collected through the plant-specific questionnaires on generation of residues and other circular economy measures, whether any BAT-AEPLs (at process level) and/or benchmarks should be derived.

5.6 Decarbonisation and greenhouse gas emissions

In BP Section 4.1, EU-BRITE proposed the following:

- To agree on the type of data and contextual information to be collected on decarbonisation at a later stage, e.g. during the questionnaire development.
- To decide at a later stage with the TWG, based on the data collected through the questionnaires, whether any provisions on decarbonisation and greenhouse gas emissions should be set.

The TWG generally agreed with the proposal. Various delegations' comments focused on avoiding overlapping with other existing legislation (e.g. Batteries Regulation, EU ETS, Carbon Footprint). Moreover, some of the TWG proposed to collect contextual information in general, without any strict prerequisite, and to identify at a later stage what information could be useful and if any provisions should be set. The TWG emphasised the need to reduce administrative burden in general, and EU-BRITE clarified that overlapping with other legislation should be avoided.

In contrast, an environmental NGO raised concerns on decarbonisation and greenhouse gas emissions and the need to tackle these topics in the PBG BREF in a detailed manner. A further argument put forward by the environmental NGO was about the need for systematic comparable data collection at installation level to have a better understanding of measures taken for climate goals and environmental protection in battery manufacturing plants.

The proposal was revised and the consensus reached was as follows.

Conclusions reached by the TWG:

- To agree on the type of data and contextual information to be collected on decarbonisation at a later stage, e.g. during the questionnaire development.
- To decide at a later stage with the TWG, based on the data collected through the questionnaires, whether any provisions on decarbonisation and greenhouse gas emissions should be set.
- To reflect in the Kick-off Meeting report the need to avoid any overlap with already existing provisions in other legislation (e.g. Batteries Regulation).

Even though there was a broad consensus on the conclusions, the environmental NGO EEB did not support the exclusion of decarbonisation and greenhouse gas emissions as KEIs.

6 MONITORING OF RESOURCE CONSUMPTION

In BP Section 4.3, EU-BRITE proposed the following:

- To collect data and contextual information on resource efficiency (e.g. consumption of water, energy, raw materials including chemicals).

The TWG agreed with the proposal, and no changes were requested during the KoM.

Conclusions reached by the TWG:

- To collect data and contextual information on resource efficiency (e.g. consumption of water, energy, raw materials including chemicals).

7 ODOUR EMISSIONS

In BP Section 4.4, EU-BRITE proposed the following:

- To include odour emissions as a KEI for Li-ion and solid-state batteries manufacturing.
- To collect information on techniques to measure odour emissions to air.
- To collect information on techniques to prevent and/or to reduce odour emissions.

The EU-BRITE proposal was not foreseen for discussion at the KoM and was not requested to be discussed. Therefore, the TWG conclusion was as follows.

Conclusions reached by the TWG:

- To include odour emissions as a KEI for Li-ion and solid-state batteries manufacturing.
- To collect information on techniques to measure odour emissions to air.
- To collect information on techniques to prevent and/or to reduce odour emissions.

8 OTHER THAN NORMAL OPERATING CONDITIONS (OTNOC)

In BP Section 4.6, EU-BRITE proposed the following:

- To collect information on the possible OTNOC situations that occur in battery manufacturing installations according to the battery type considered. To collect information on the main impacts associated with OTNOC (e.g. on environment and/or human health) as well as on techniques and measures applied to prevent OTNOC or to mitigate these impacts.

The EU-BRITE proposal was not foreseen for discussion at the KoM and was not requested to be discussed. Therefore, the TWG conclusion was as follows.

Conclusions reached by the TWG:

- To collect information on the possible OTNOC situations that occur in battery manufacturing installations according to the battery type considered. To collect information on the main impacts associated with OTNOC (e.g. on environment and/or human health) as well as on techniques and measures applied to prevent OTNOC or to mitigate these impacts.

9 CONFIDENTIAL BUSINESS INFORMATION (CBI)

In BP Section 4.10, EU-BRITE proposed the following:

- To design the questionnaire for the data collection in a way that avoids requesting CBI as much as possible, so that all data provided can be posted on BATIS and thus shared with the whole TWG.
- The TWG to decide during the questionnaire development phase on the type and format of potentially CBI that needs to be collected. If certain data are considered CBI, the Member States' representatives in the TWG to:
  - submit the versions of the questionnaires containing the confidential information directly to EU-BRITE via email, and
  - post the versions of the questionnaires containing the non-confidential information onto BATIS.
- The TWG to agree on the confidentiality and non-disclosure agreement to be signed for data collected as CBI to be discussed and analysed, to ensure the largest possible participation of TWG members, while protecting the legitimate economic interests of battery manufacturers and minimising the risk of disclosure.

The TWG generally agreed with the proposal. During the exchange, EU-BRITE explained previous experiences (e.g. from other BREFs) with data collection, how to deal with CBI data, and ways to avoid requesting CBI data so that data provided can be shared with the whole TWG. Various delegations raised concerns on data which could potentially be considered CBI. In this regard, EU-BRITE reassured them that it has long-standing and well-tested experience in gathering and assessing CBI data. In addition, EU-BRITE presented its new internal online tool (BREF Survey Tool - BEST) which is a restricted/access-controlled application to collect data and information. A demo of BEST was presented to the group. EU-BRITE further clarified that submission of questionnaires via email or via BATIS would no longer be required. In that vein, the proposal was revised accordingly and the consensus reached was as follows.

Conclusions reached by the TWG:

- To design the questionnaire for the data collection in a way that avoids requesting CBI as much as possible, so that all data provided can be posted on BATIS and thus shared with the whole TWG.
- The TWG to decide during the questionnaire development phase on the type and format of potentially CBI that needs to be collected. If certain data are considered CBI, those data and information will be collected through a restricted/access-controlled application, i.e. the BREF Survey Tool (BEST).
- The TWG to agree on the confidentiality and non-disclosure agreement to be signed for data collected as CBI to be discussed and analysed, to ensure the largest possible participation of TWG members, while protecting the legitimate economic interests of battery manufacturers and minimising the risk of disclosure.

10 STRUCTURE OF THE BREF

In BP Section 4.7, EU-BRITE proposed the following:

- The detailed structure and layout of the PBG BREF and related BAT conclusions will be proposed when drafting D1, with the active contribution of the TWG, based on the battery manufacturing-specific data and bulk information collected, informed by the BREF Guidance.

The TWG agreed with the proposal, and no changes were requested during the KoM.

Conclusions reached by the TWG:

- The detailed structure and layout of the PBG BREF and related BAT conclusions will be proposed when drafting D1, with the active contribution of the TWG, based on the battery-manufacturing-specific data and bulk information collected, informed by the BREF Guidance.

11 EMERGING TECHNIQUES (ET)

In BP Section 4.2, EU-BRITE proposed the following:

- To collect information and performance data on emerging techniques applicable to the activities/and processes covered by the PBG BREF and associated with the KEIs to be agreed (e.g. including emissions to air, emissions to water, energy and water consumption, raw materials, decarbonisation, chemicals and other KEIs when it is relevant).

EU-BRITE also presented the basic elements of INCITE (the Innovation Centre for Industrial Transformation and Emissions), launched in June 2024. INCITE (https://innovation-centre-for-industrial-transformation.ec.europa.eu/) collects and analyses information on innovative techniques, including emerging and transformative techniques, which contribute *inter alia* to minimisation of pollution, decarbonisation, resource efficiency, and a circular economy using fewer or safer chemicals, relevant to activities within the scope of the IED. Therefore, INCITE may feed the PBG BREF drafting process with information on emerging techniques that may be applicable in activities covered by the PBG BREF.

It was also emphasised that the collection of information on ET applicable to the activities covered under the PBG BREF falls under the remit of the PBG TWG and would be part of the information exchange.

Following the discussion, consensus was reached without any request to amend the proposal.

Conclusions reached by the TWG:

- To collect information and performance data on emerging techniques applicable to the activities and processes covered by the PBG BREF and associated with the KEIs to be agreed (e.g. including emissions to air, emissions to water, energy and water consumption, raw materials, decarbonisation, chemicals and other KEIs when it is relevant).

12 INFORMATION AND DATA COLLECTION

12.1 Expression of BAT-AE(P)Ls/ET-AE(P)Ls and benchmarks on consumption, resource efficiency, reuse of materials/water and residue generation

In BP Section 4.5.1, EU-BRITE explained the general approach for the data and contextual information necessary for the expression of BAT-AELs and ET-AELs. This topic was not foreseen for discussion at the KoM and it was not requested to be discussed during the KoM. Therefore, the consensus that was reached was as follows.

Conclusions reached by the TWG:

Expression of BAT-AELs/ET-AELs for emissions to air

- Collection of short-term emission data for setting BAT-AELs/ET-AELs as short-term averages seems feasible.
- The sampling time depends on the pollutant concentration in the emissions to air and on the measurement range of the analytical method used for analysis.
- In several recent BREFs, averaging periods associated with BAT-AELs for emissions to air for periodic measurements are expressed as the average of three consecutive measurements of at least 30 minutes each. In the case of continuous monitoring, daily averages have been set. The contextual information that needs to be collected to have a better understanding of data on emissions is proposed to be defined during the drafting of the questionnaire.

Expression of BAT-AELs/ET-AELs for emissions to water

- Short-term averages also seem common and accessible for data collection purposes.
- As for several recent BREFs, in the case of batch discharges, average values over the release duration, taken as flow-proportional composite samples, may be considered. In addition, time-proportional composite samples may also be considered provided that sufficient flow stability is achieved. Spot sampling may also be considered provided that the effluent is appropriately mixed and homogeneous.
- The contextual information that needs to be collected to have a better understanding of data on emissions is proposed to be defined during the drafting of the questionnaire.

In BP Section 4.5.2, EU-BRITE proposed the way forward for the expression of BAT-AEPLs/ET-AEPLs and/or benchmarks in drafting BREF and BATC. The EU-BRITE proposal was not foreseen for discussion at the KoM. However, it was briefly discussed and some delegations pointed out the need to complement the proposal with a reference to the need to collect information on the units used in installations for expressing relevant parameters. Following the discussion, the consensus that was reached was as follows.

Conclusion reached by the TWG:

Expression of AEPLs/benchmarks

- The expression of BAT-AEPLs/ET-AEPLs/benchmarks to be decided at a later stage with the TWG, during the questionnaire development.
- The TWG to collect information on the units used in installations for expressing relevant parameters (e.g. kWh/tonne of Pb) and to upload this information on BATIS.

12.2 Selection of installations for the data collection

In BP Section 4.8, EU-BRITE proposed the following:

- The TWG to submit proposals, during the BREF development process, of well-performing (including best-performing) PBG installations to participate in the data collection aiming at the maximum number of operating installations.

The EU-BRITE proposal was not foreseen for discussion at the KoM. The TWG agreed with the proposal, and no changes were requested during the KoM.

Conclusions reached by the TWG:

- The TWG will submit proposals, during the BREF development process, of well-performing (including best-performing) PBG installations to participate in the data collection aiming at the maximum number of operating installations.

12.3 Data collection procedure (questionnaire)

In BP Section 4.9, EU-BRITE proposed the methodology to follow on the establishment of the site-specific data collection procedure, i.e. questionnaire design. The EU-BRITE proposal on the data collection procedure (questionnaire design) was not foreseen for discussion at the KoM. The TWG agreed with the proposal, and no changes were requested during the KoM.

Conclusions reached by the TWG:

- To follow the established BREF process for the collection of site/plant-specific data via questionnaires including the following:
  1. the preparation of the draft questionnaire by EU-BRITE followed by the commenting of the TWG;
  2. the organisation of a questionnaire workshop to finalise the questionnaire;
  3. the testing of the draft final questionnaire by a selected (small) number of sites;
  4. the preparation of the final questionnaire by EU-BRITE;
  5. the distribution of the final questionnaire through Member States' representatives;
  6. the filling in of the questionnaires by the site/plant operators;
  7. the collection of the filled-in questionnaires by Member States' representatives;
  8. the quality check of the filled-in questionnaires by Member States' representatives (possibly) with the help of a checklist;
  9. the submission of the quality-checked questionnaires to EU-BRITE by Member States' representatives.

13 NEXT STEPS AND TENTATIVE TIMELINE OF THE DATA AND INFORMATION COLLECTION

EU-BRITE presented a tentative timeline for the next steps, including the timeline of the data and information collection. The BREF Survey Tool (BEST) will be used to collect data and information, including functionalities to deal with confidential business information. During the KoM, no changes to the tentative timeline were requested. The EU-BRITE proposal was adopted without any modifications.

Conclusions reached by the TWG were therefore as follows.

Table 13-1: Next steps – tentative timeline of the PBG BREF drawing up process

Step	Tentative time
EU-BRITE to prepare the site/plant-specific questionnaire for data collection and to issue the first draft questionnaire template	October/November 2026
TWG to provide proposals of well-performing reference sites/plants for the data collection via questionnaire	November 2026
TWG feedback on the first draft questionnaire	December 2026
EU-BRITE to compile the list of well-performing reference sites/plants to check its completeness; if necessary, EU-BRITE to ask TWG members to amend/complete the list	December 2026
EU-BRITE to issue the second draft questionnaire	January 2027
Workshop on the questionnaire finalisation (if necessary)	February 2027
EU-BRITE to issue third draft questionnaire	March 2027
Questionnaire testing	March 2027
EU-BRITE to issue the final questionnaire and distribution to the participating plants	April 2027
TWG to provide bulk information to draw up the PBG BREF, namely information on applied processes and techniques, on the techniques to be considered for determination of BAT and on emerging techniques	April 2027
Submission of filled-in questionnaires in BATIS	September 2027

13.1 TWG subgroups

There was no initial proposal on the creation of TWG subgroups. However, based on the discussion and exchange during the KoM, one MS, supported by others, proposed to establish a subgroup on the *'collection and analysis of information on permits for lithium-based and sodium-based battery installations useful for the BREF process'.*

In this regard, EU-BRITE reminded the TWG that the establishment of TWG subgroups is addressed by the BREF Guidance. It was agreed that the draft Mandate and Terms of Reference (ToR) of the subgroup would be shared after the KoM and TWG members would be asked to express interest in participating in this subgroup.

13.2 Site visits

In BP Section 4.11, EU-BRITE proposed the following:

- To ask the TWG to suggest concrete site visits by battery type in line with the scope of the PBG BREF during the BREF development process.

The TWG agreed with the proposal, and no changes were requested during the KoM.

Conclusions reached by the TWG:

- The TWG to suggest concrete site visits by battery type in line with the scope of the PBG BREF during the BREF development process.

14 INTRODUCTION TO BATIS

EU-BRITE introduced BATIS – the Best Available Techniques Information System, web-based software to facilitate the exchange of information for the drawing up and review of BREFs. More specifically, BATIS is used to manage the list of TWG members and to make all data and information collected in the BREF drawing up process available to the TWG.

EU-BRITE provided hands-on guidance on basic BATIS features, e.g. obtaining and changing login credentials, reviewing and adapting personal information, the basic structure of PBG BREF folders, adding new posts, and uploading and downloading documents.

The TWG was invited to contact EU-BRITE with any further technical questions or comments.