

'Key Issues' for the Review of the STS BREF

(Proposals and information requests to focus the review of the STS BREF)

1. Scope of the STS BREF

- 1.1 The scope of the current reference document on surface treatment using organic solvents (STS BREF, 2007) was based on Annex I (activity 6.7) to Council Directive 96/61/EC of 24 September 1996 on Integrated Pollution Prevention and Control (the IPPC Directive). With the implementation of the IED the wording of activity 6.7 of Annex I was slightly changed (from 'consumption capacity' to 'organic solvent consumption capacity'), but the actual content and the thresholds remained unchanged.

Activity 6.7 of Annex I to the IED:

'Surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with an organic solvent consumption capacity of more than 150 kg per hour or more than 200 tonnes per year¹. '

It is proposed to limit the scope to those STS activities above the capacity threshold of Annex I, activity 6.7. The TWG is asked to note that techniques discussed may be used in smaller plants which will fall within the scope of Chapter V of the IED, although outside the scope of Chapter II. However, BAT conclusions and BAT-AEPLs will apply only to installations falling within the scope of Chapter II (Annex I activities).

- 1.2 During the information exchange for the 2007 STS BREF, TWG members asked for clarification of the definition of 'organic solvents'. The Industrial Emissions Directive, in Chapter I 'Common Definitions', Article 3 provides the following definitions for Chapter II (previously IPPC) and Chapter V (previously SED):

(45) 'volatile organic compound' (VOC) means any organic compound as well as the fraction of creosote, having at 293,15 K a vapour pressure of 0,01 kPa or more, or having a corresponding volatility under the particular conditions of use;

(46) 'organic solvent' means any volatile organic compound which is used for any of the following:

- (a) alone or in combination with other agents, and without undergoing a chemical change, to dissolve raw materials, products or waste materials;
- (b) as a cleaning agent to dissolve contaminants;
- (c) as a dissolver;
- (d) as a dispersion medium;
- (e) as a viscosity adjuster;
- (f) as a surface tension adjuster;
- (g) as a plasticiser;
- (h) as a preservative.

For consistency, it is proposed to use these definitions in the review of the BREF.

Request to TWG (Doc.4. worksheet 1. SCOPE Section 1.2.):

The TWG members are asked to provide their opinion as to whether these definitions are considered suitable (workable) for the STS BREF review. If not, they are kindly asked to provide alternative proposals and related reasoning / information.

¹ Wood preservation using solvents is covered by this definition, as well as the definition in IED Annex 1, Activity 6.10

1.3 The current STS BREF covers the following 18 sectors (by chapter number):

2. Printing
3. Manufacture of winding wire
4. Manufacturing of abrasives
5. Manufacturing of adhesive tape
6. Coating of cars (+light vans)
7. Coating of vans, trucks, and truck cabs
8. Coating of buses
9. Coating of trains
10. Coating of agricultural and construction equipment
11. Coating of ships and yachts
12. Coating of aircraft
13. Coating of other metal surfaces
14. Coil coating industries
15. Coating and printing of metal packaging
16. Coating of plastic workpieces
17. Coating of furniture and wood materials
18. Wood preservation (*solvent-using wood preservation*)
19. Manufacture of mirrors.

Request to TWG (Doc.4. worksheet 1. SCOPE Section 1.3.):

The TWG members are asked to provide the following information on the above listed sectors:

- number, size/capacity and distribution (by Member States) of plants/installations for activities above the relevant thresholds given in Annex I, activity 6.7;
- the estimated total sector VOC usage and emission;
- sectors where no installations now exceed the threshold.

1.4 The current STS BREF does not address some activities, due to low solvent volumes, small numbers of installations and/or lack of data. However, it was recommended under the 'Concluding Remarks' of the BREF (i.e. Chapter 23) that data should be gathered on some industries to assess whether they should be considered for inclusion in the review of the STS BREF (below).

Sectors for potential inclusion in the revised STS BREF

Sector	Available information in the current BREF
a) Manufacture of magnetic tapes	Only 3 installations in the EU, one with 80% of the market
b) Self-adhesive labels	
c) Friction linings	Less than 10 companies had half the EU market, only 20% of processes used solvents
d) Boats and large yachts constructed with resins	No data
e) Semiconductors (and possibly other electronics materials)	Silicon chip and other production: unknown number of installations, unknown solvent usage
f) Wallpapers and wall coverings (possibly embossed wallpapers and decorated (multi-layer))	No data
g) Floor coverings	No data
h) Shoe manufacturing	No installations reached the threshold

Request to TWG (Doc.4. worksheet 1. SCOPE Section 1.4.):

The TWG members are asked to:

- identify sectors not covered in the current BREF that they think should be covered in the BREF, particularly those with possible significant environmental issues and/or permitted by a Member State as an IED, Annex I activity;
- for all sectors with installations exceeding the threshold in Annex I, activity 6.7, provide the number, size/capacity and distribution (by Member States) of installations, and the estimated total sector VOC usage and emission;
- indicate any sector where no installations exceed the threshold or any sector they consider of low importance (i.e. small sector or with small environmental impact).

The TWG members are asked to note that the specific information gathered (under 1.3 and 1.4) will facilitate the determination of the scope of the STS BREF and identification of appropriate priorities. Together with the feedback on and the rating of key environmental issues (refer to Section 3), this will enable the TWG to:

- remove less important activities/sectors/applied processes and aspects from the draft BREF scope and
- focus on the relevant processes with major environmental issues.

More detailed and up-to-date information to feed into the updating of the 'General information on the STS sector' or 'Current consumption and emission levels' chapters will be asked for at a later stage in the review process.

- 1.5 The preservation of wood and wood products with chemicals (WPC) is a new activity under the Industrial Emissions Directive (2010/75/EU) described in Annex I, activity 6.10:

'Preservation of wood and wood products with chemicals with a production capacity exceeding 75 m³ per day other than exclusively treating against sapstain.'

Parts of the WPC sector, namely plants using solvent-based preservatives with a solvent consumption of more than 150 kg/h or 200 t/a), are covered by the current STS BREF. It has been decided to deal with the 6.10 activities in the STS BREF (refer to the message of DG ENV to the Article 13 forum of 5 May 2015).

- 1.6 Annex I, activity 6.10 refers to 'preservation with chemicals' and not explicitly to biocides. In the EIPPCB's call for initial positions on the previously planned WPC BREF (message to the WPC TWG dated 6 October 2014), it was suggested to include in the scope the treatment of wood with chemicals other than biocides if this is carried out on an industrial scale and exceeds the relevant IED thresholds. It was proposed to include chemical wood modification (acetylation, furfurylation, polymerisation) and hydrophobisation as WPC sectors and to provide information on environmental impacts and technical measures to reduce them.

The WPC TWG reported only four individual installations using: silicon (SE), acetylation (NL), furfurylation (NO), polymerisation (DE), but no information on their production capacity was given. DK indicated 'several' plants, but below the IED threshold. No specific information on potential environmental impacts was provided.

Considering that the WPC sector is not being dealt with in a standalone BREF and the need to focus on sectors with major environmental issues, it is now proposed not to cover chemical wood modification and hydrophobisation fully as WPC sectors in 'Applied processes and techniques' in the revised STS BREF. However, it is proposed to collect information on them as 'Techniques to consider in the determination of BAT' (Chapter 20).

Request to TWG (Doc.4. worksheet 1. SCOPE Section 1.6.):

The TWG members are asked if they agree with the proposal not to include wood preservation processes exclusively using chemicals other than biocides (i.e. chemical wood modification and hydrophobisation) as WPC sectors. If not, please provide information for each activity on the number of installations, size/production capacities and the expected significant environmental impacts (consumptions as well as emissions).

2 Structure of the BREF

- 2.1 In revising the BREF, the TWG needs to consider if the current structure functions well or needs modification, and how the WPC activities and/or any new sectors can be integrated. The current STS BREF has the following structure:

Chapter/Section/Part	
Preface	
Scope	
Chapter 1	'General information on surface treatment using organic solvents'
Chapters 2 to 19 for each of the 18 specific sectors*:	
	Section X.1 'General information on the sector'
	Section X.2 'Applied processes and techniques'
	Section X.3 'Current emission and consumption levels'
	Section X.4 'Techniques to consider in the determination of BAT'
Chapter 20	'Techniques to consider in the determination of BAT applicable in all industries'
Chapter 21	'Best Available Techniques (BAT) conclusions for STS'
Chapter 22	'Emerging techniques for STS'
Concluding remarks	
References	
Glossary of terms and abbreviations	
Annexes	
*Note: For 'Printing' the Sections 2.3 and 2.4 are subdivided for the three activities: Heatset offset printing, flexography and packaging gravure, publication gravure printing	

The current structure was developed as the best way to address industrial sectors and their issues individually yet consider common techniques together. The sector numbering is also reflected in the BAT Chapter 21, so that BAT for industry sector x are covered under Chapter 21.x.

With the view of integrating WPC activities into the STS BREF, some sections will need to be expanded and/or added. A potential amended BREF structure, based on the current structure, is given in the attached **document 3**.

Request to TWG (Doc.4. worksheet 2. STRUCTURE Section 2.1.):

The TWG members are asked to consider and provide feedback on:

- Is the suggested structure suitable for the sectors and activities identified in the scope of the BREF, to present the 'Techniques to consider in the determination of BAT' and the 'BAT conclusions'?
- If not, what alternatives could be considered?

3 Potential key environmental issues

3.1 The following key environmental issues were identified in the current STS BREF (see to Sections 1.2.1 – 1.2.10 of the current STS BREF):

- solvent emissions to air, water and soil (and thus also to groundwater),
- emissions of metals in certain sectors,
- emissions of biocides in certain sectors,
- particulate emissions to air,
- energy usage,
- raw material usage,
- water usage (predominantly dealt with in the STM BREF),
- waste minimisation and management (solid and liquid residues/wastes),
- site condition on cessation of activities,
- noise.

3.2 The current STS BREF also highlights some issues as potential key environmental issues for a review, which were not covered due to lack of information or late identification of the issue. The issues listed in the 'Concluding remarks' (Chapter 23.4.1) are:

- NO_x from N-containing solvents (used in some of the processes discussed and potentially a source of NO_x emissions due to oxidation),
- secondary aerosols,
- odour.

Request to TWG (Doc.4. worksheet 3. Key environmental issues):

The TWG members are asked for feedback on all the key environmental issues listed in the attached worksheet. In particular, input from the TWG is requested:

- On the amount of solvents containing nitrogen used in the EU, the projected future usage and the estimation of NO_x emissions due to the use of these solvents.
- On the formation of secondary aerosols and whether these constitute an environmental problem (from which processes). If a problem is identified, information on the extent and its control will be requested in the review process.
- Whether they consider odour a key environmental issue and for which processes.

The TWG members are invited to complement any missing key environmental issue and/or pollution parameter and to comment on the proposed list by filling in the corresponding columns in the Excel sheet providing a rating of the issues (major/intermediate/minor).

3.3 Emissions to waste water are not identified as a priority in the current BREF. In focusing the review of the BREF, the TWG members are asked to consider if water-based processes and waste water treatment techniques are adequately covered in the STM BREF and the CWW BREF, including the adequacy of any BAT-AELs in these BREFs.

3.4 With the expansion of the scope of the STS BREF to cover wood preservation activities, some new key environmental issues may arise or the discussion in the existing STS BREF may need revising. For example, the STS BREF identifies the accidental (unplanned) release of solvents as a key issue: similarly, accidental releases of hazardous chemicals such as biocides have been identified as a key issue by the WPC TWG. The feedback already received from the WPC TWG will therefore be fed into the STS BREF review process appropriately.

4. Applied processes and techniques to be covered

4.1 The 'Applied processes and techniques' chapter briefly describes the production processes currently applied in the industrial sector(s) covered by the BREF. It sets out the sequential steps in a typical manufacturing unit. The production process steps from raw material delivery to final product dispatch are covered, including:

- raw materials (including secondary/recycled) and consumables used, including water and energy,
- auxiliary substances/materials used (if they have environmental significance),
- raw material preparation (including storage and handling),
- material processing,
- product manufacture,
- product finishing,
- techniques applied to prevent or reduce emissions,
- intermediate and final product storage and handling,
- handling and fate of by-products and residues/wastes.

The actual or possible relationships and linkages between various activities/process steps should be described, in particular where these may affect the overall environmental performance. The level of detail of the description and inclusion of applied processes and individual process steps should reflect their environmental relevance and their potential impact on BAT determination.

Since the drafting of the current STS BREF, significant changes may have occurred in some of the sectors covered in this BREF, such as greater use of water-based and/or radiation cured coatings or the use of alternatives such as plastic films.

Request to TWG (Doc.4. worksheet 4: APPLIED PROCESSES TECHNIQUES):

For the existing STS sectors, the TWG members are asked to point out for the relevant Sections X.2 (*Note: this is the sector description Applied processes and techniques, not the 'Techniques to consider in the determination of BAT'*):

- any significant changes to the processes and techniques used,
- any applied technique in the current BREF that is considered obsolete,
- any new applied technique they consider should be covered in the revised STS BREF.

For any sector not currently covered in the BREF, but proposed for inclusion (see 1.4 above), the TWG is asked to provide a process description as described above.

5. Techniques to consider in the determination of BAT

5.1 In the current STS BREF, information on the 'Techniques to consider in the determination of BAT' was organised under a nine headings structure. This has been expanded to ten headings under the new BREF, namely:

Description*
Technical description*
Achieved environmental benefits
Environmental performance and operational data
Cross-media effects
Technical considerations relevant to applicability
Economics
Driving force for implementation
Example plants
Reference literature

The Description is now split (marked by*). The (first) Description is a brief description of the technique with the intention of being used (copy-pasted) in the BAT conclusions. The 'Technical description' is a more detailed (but yet concise) technical description using, as appropriate, chemical or other equations, pictures, diagrams and flow charts.

Many of the techniques described in the current BREF contain information that may now be considered outdated while significant parts (headings) of information and data needed for a complete BAT assessment are missing. Filling these gaps and updating the information is one of the major tasks of the STS BREF review process.

Request to TWG (Doc.5. worksheet 1: GENERAL CANDIDATE BAT and the corresponding SECTOR's worksheet):

The TWG members are asked to screen the current BREF's Techniques to consider in the determination of BAT' and to:

- indicate any obsolete techniques (e.g. that are no longer applied in any of the sectors);
- point out any relevant technique that is missing;
- highlight the techniques in the current BREF where the description and/or data require updating;
- indicate - for the general techniques (i.e. listed in Chapter 20 of the current BREF) - the sector(s) in which they are applicable.

The TWG members are asked to provide their feedback by filling-in the corresponding cells in the Excel templates (**document 5**). For all BAT candidate techniques, an indication should be given as to whether information on these candidates (preferably following the 10-heading structure given in the 'BREF Guidance'), including for example performance data and economics, can be provided later in the review process.

6. Environmental performance

- 6.1 In order to evaluate the environmental performance of techniques or combinations of techniques, the BREF seeks to provide data on the emissions, consumption and/or emission reduction efficiency. The collected data are used to derive 'environmental performance levels associated with BAT' (i.e. BAT-AEPLs).

In the current STS BREF, various units are used to describe emissions and BAT-AELs for individual sectors, e.g.:

- wt-% of ink consumption
- % of the reference emission
- g/kg
- wt-% of solvent input
- g/m²
- kg/body
- gVOC/m² painted area
- mgC/m³
- kg VOC/kg solids input.

In the IED Annex VII, Parts 2, 3 and 5, the units used for providing ELVs for the sectors covered in the current STS BREF are:

- | | |
|--|--|
| - mg C/Nm ³ | for waste gases |
| - % of solvent input | for fugitive emissions |
| - g/kg* or kg/m ³ * or g/m ² | for total emissions (* referring to product) |
| - kg VOC solvent/kg solids input | for the reduction scheme |
| - wt-% VOC/wt-% solids input | for the reduction scheme |

The choice of units to be used for describing the environmental performance of techniques and to provide BAT-AEPLs in the STS BREF has an implication for the data collection, therefore the TWG should agree at an early stage of the revision process on the key performance indicators, i.e. parameters, units and averaging periods, so that the data collection can be tailored to provide the necessary data for an assessment of techniques (i.e. 'BAT candidates') and for derivation of BAT conclusions including the relevant BAT-AEPLs.

Request to TWG (Document 4, Worksheet 6: Environmental performance):

The TWG members are asked to provide feedback on the suitability of the units used for the individual sectors in the current STS BREF. If other units are considered more appropriate, explanations and rationale should be provided.

Furthermore, TWG members are asked to provide information on other performance indicators (e.g. referring to key environmental issues other than air emissions) they consider relevant to assess or monitor the environmental performance of activities/techniques under the scope of this BREF.

7. Monitoring-related and other Annexes

- 7.1 To assist with the application of BAT-AELs, several annexes were included in the current STS BREF providing information on the calculation of VOC emissions (generally or for specific sectors), measuring of fugitive emissions, etc., as listed below:

- 24.1 Models for estimating cost benefit
- 24.2 Calculation of VOC emissions and the units used
- 24.3 Measuring fugitive emissions – direct method
- 24.4 The common cases for mass balances
- 24.5 Determination of VOC emissions from vehicle paint shops
- 24.6 Some Solvent Emission Directive limit values
- 24.7 Calculation of effective POCP
- 24.8 Marginal social costs of climate change
- 24.9 Removal efficiency of waste gas treatment techniques

Several of the annexes refer to the SED and would, per se, require updating and amending to refer to the IED. However, in the context of the BREF review, these annexes should be carefully looked at and any obsolete information should be removed, while for example important information on monitoring should be considered for integration into the main text of the revised BREF.

Request to TWG (Doc.4. worksheet 7: ANNEXES):

The TWG are asked to provide their feedback on the following:

- Which of the information in these annexes is still relevant, useful and up to date (or requiring updating).
- How the useful information should be included in the revised BREF, taking into consideration that the BAT conclusions chapter of the revised BREF will form a stand-alone document (and will not contain any cross reference, e.g. to emission calculation methods).