

Some Key Issues for the Review of the WPC BREF

1. Scope

- 1.1 It is proposed that the term 'wood preservation' is referring to activities with the purpose of protecting wood and wood products from the damaging effects of fungi, bacteria, insects, water or weather. It involves the penetration of preservatives into the wood to provide long-term conservation of its structural integrity and to improve its resistance.

In other words, all measures that are taken to ensure a long life of wood and that involve the use of chemicals fall under the definition wood preservation. Preservatives are not only pesticides, fungicides or biocides, but also any chemical (oil, emulsion etc.) used for water proofing.

Surface treatment activities, such as coating, painting, spraying, laminating etc., in order to conserve or strengthen the colour, surface structure and/or porosity, differ from wood preserving and are not considered under the scope of wood preservation. It is proposed to cover these activities, in case they use organic solvents, under the scope of the STS BREF (refer also to Chapter 17 of the current STS BREF). The activities currently covered under Chapter 18 of the current STS BREF will form part of this new WPC BREF.

- 1.2 It is proposed to include in the scope:
- wood preservation plants/installations above the capacity threshold of Annex I, activity 6.10, i.e. plants/installations exceeding a production capacity of 75 m³ per day and,
 - wood preservation plants/installations using organic solvents, with an organic solvent consumption capacity of more than 150 kg per hour or more than 200 tonnes per year (Annex I, activity 6.7), or exceeding a production capacity of 75 m³ per day. (*Note: for wood preservation using solvents, whichever is the 'lower' threshold determines the inclusion.*)

In drawing up the WPC BREF the production capacity is relevant a) for determining the 'applied processes' to be covered in Chapter 2 and b) for identifying suitable plants for the collection of plant-specific data.

For purpose a) main focus of attention should be the maximum potential production capacity for the different preservative application processes. This would mean not taking into account potential plant specific technical restrictions or bottlenecks in other stages of the process (e.g. in the storage yard). It should be considered whether certain preservative application processes exclusively take place at installations below the relevant thresholds in Annex 1 of the IED. These preservative application processes would not need to be covered in detail in the WPC BREF or by the data collection.

For the purpose b) of identifying suitable plants for the data collection, reference is made to the 'Guidance on Interpretation and Determination of Capacity' (http://ec.europa.eu/environment/industry/stationary/ippc/pdf/capacity_guidance.pdf). The 'capacity' is defined as the maximum capacity to which the installation is limited technically or legally. That is to say, it is the capacity of the installation to operate 24 hours a day, provided that the equipment is not technically or legally restricted from operating in that way. Plants exceeding the above mentioned capacity could be suitable to be include in the data collection for drafting the WPC BREF.

Information request:

The TWG is asked to provide information on plants/installations above the relevant thresholds given in 6.10 and 6.7 in terms of: number and size/capacity of plants/installations, preservative application processes (e.g. pressure/non-pressure processes) and chemicals/preservatives used. Please refer also to the proposed structure of the WPC BREF (attached document 3). Some of the preservative application processes listed might only be used by plants with small production capacities, not exceeding IED thresholds and should therefore not be covered in detail in the WPC BREF. For your submission of information please refer to the Excel template provided in document 4.

- 1.3 Another surface treatment activity (surface protection) of wood is sap stain treatment. It is characterized by the non-pressure application of specially formulated wood treatment products to protect peeled logs from mold and stain causing fungi. It is primarily designed to provide short-term cosmetic protection, but mold, mildew, and sap stain increase the wood's ability to hold water and thus increase the risk of decay.

Plants exclusively treating against sap stain are excluded from activity 6.10 in Annex I to the IED. However, it is proposed that sap stain treatment, if it is performed in conjunction with/in the same plant as wood preservation, shall be covered under the scope of WPC if the combined production capacity exceeds 75 m³ per day or the consumption of solvents exceeds 150 kg/h or 200 t/a.

The TWG is asked to note that although exclusive sap stain treatment is excluded under activity 6.10 of Annex I, exclusive sap stain treatment using organic solvents could still fall under the scope of activity 6.7 of Annex I 'Surface treatment/ Impregnating with organic solvents' if solvent consumptions exceeds the given thresholds of > 150 kg/h or 200 t/a. Current information indicates that the majority of sap stain treatment is water-based.

Information request:

The TWG is asked to provide information on sap stain treatment, especially regarding the existence of installations having both sap stain treatment and wood preservation on site, the use of organic solvents, the application processes involved and the number and size of plants potentially falling under the scope of the WPC BREF. For your submission of information please refer to the Excel template provided in document 4.

- 1.4 It is proposed that plants using water-based, solvent-based and creosote preservatives for the protection of wood and wood products are included in the scope of this BREF.
- 1.5 It is proposed to include the chemical modification¹ of wood, such as acetylation, furfurylation and impregnation/polymerisation, in the scope of the WPC BREF if these are carried out on industrial scale and exceed the relevant IED thresholds.

Information request:

The TWG is asked to provide information on installations for chemical wood modification, regarding their number, size/production capacity and the applied

¹ Wood modification involves the action of a chemical, biological, or physical agent upon the material resulting in a permanent change to the polymeric chemical composition; with such a change leading to a desired property enhancement.

techniques. For your submission of information please refer to the Excel template provided in document 4.

- 1.6 Depending on the wood raw material input, wood preservation plants can include - to a varying degree – mechanical wood processing activities (such as debarking, peeling, cutting, framing, planning, drilling etc.) before treatment. These activities are technically connected to the wood preservation activities and may have an impact on emissions; it is therefore proposed to cover these upstream activities in the WPC BREF as directly associated activities.
- 1.7 To meet energy, heat or steam requirements for industrial wood preservation plants combustion processes could be part of activities on a WPC site. Large combustion plants (total rated thermal input equal to or greater than 50 MW), however, are covered by Chapter III of the IED and the LCP BREF.

For medium-sized combustion plants with a rated thermal input equal to or greater than 1 MW and less than 50 MW, a Commission proposal for a Directive on limitations of emissions to air is currently discussed by the European Parliament and the Council of the European Union. It is therefore proposed not to cover the above mentioned combustion plants.

However, as both documents exclude '*plants in which the products of combustion are used for direct heating, drying, or any other treatment of objects or materials*' in their scope, it is proposed to cover these in the WPC BREF (e.g. if flue gases are used to dry wood prior to wood preservation treatment).

Information request:

The TWG is asked to provide information on combustion processes taking place on wood preservation sites, especially on the application of kiln drying with regard to whether this is done directly (combustion products in contact with wood) or indirectly (using heat exchangers etc.). For your submission of information please refer to the Excel template provided in document 4.

- 1.8 In case auxiliary processes, such as treatment of waste - especially waste contaminated with wood preservatives - take place on the WPC site or in case of waste water being treated (oil separators etc.) before discharge, it is proposed to cover these activities in the WPC BREF.

Information request:

In order to be able to evaluate the extent of auxiliary processes and possible inclusion in the scope of the WPC BREF, the TWG is asked to provide information on whether these activities normally take place on site in the WPC sector and if so, to what extent/which treatments? Information should also be submitted on the direct or indirect discharge of waste water. For your submission of information please refer to the Excel template provided in document 4.

2. Structure of the BREF

- 2.1 It is proposed that the BREF should follow the standard BREF structure as outlined in Commission Implementing Decision 2012/119/EU, i.e.:

Preface

Scope

Chapter 1 – General information

Chapter 2 – Applied processes and techniques

Chapter 3 – Current emission and consumption levels

Chapter 4 – Techniques to consider in the determination of BAT

Chapter 5 – BAT conclusions

Chapter 6 – Emerging techniques

Chapter 7 – Concluding remarks and recommendations for future work

Annexes

Glossary

References

It is proposed to cover separately under each chapter the groups of wood preservatives: water-based, solvent-based, creosote and to follow the sequence of the production process: 1. Storage and handling of raw materials, 2. Preparation/Conditioning of Wood, 3. Application Process, 4. Drying and storage of treated wood. For a more detailed proposal for the structure of the WPC BREF and an overview of the processes and aspects to cover, please refer to document 3.

- 2.2 It is proposed that the BAT conclusions should follow a structure similar to that in Chapter 2, (document 3) i.e.:

- General BAT conclusions applicable across all types of plants
- Additional BAT conclusions applicable to certain types of plants, e.g. plants using water-based preservatives, plants using solvent-based preservatives, plants using creosote, etc.

And then within each group of conclusions, by emission / environmental impact, i.e.:

- Consumption, energy efficiency, etc.
- Monitoring (*alternatively 'Monitoring' could be covered under General BATc with distinct applicability for sub-sectors*)
- Emissions to air, water, etc.
- Treatment of residues.

3. Potential key environmental issues

The environmental issues related to the impregnation of wood are strongly linked to the chemicals that are used to impregnate the wood. Water-based, tar oil-based (creosote) and solvent-based preservatives are being used. Impregnation of wood potentially causes emissions to air, releases of hazardous substances to water, and risks of soil contamination. In addition, energy aspects and waste generation could be issues to consider.

Emissions to air

The main emission to air is caused by the solvent content of the solvent-based and creosote preservatives (volatile organic compounds -VOC). Aerosols and vapours may be emitted during loading, storage, handling, mixing processes involving organic solvents and organic solvent containing materials, as well as preservative solution storage. A major source for aerosol emissions from the (pressure) preservation process is when the vessel door is opened after the treatment cycle. During treatment, additional vapour emissions may occur from the work tank during the initial vacuum stage, the flooding under vacuum, pressure relief and blowback, and the final vacuum. Aerosols and vapour may also be emitted from the vessel door area during pressure treating. The majority of the diffuse emissions occur during the drying stages, as the wood treated with solvent based agents or creosote, still emits VOC to air for some time. Cleaning operations using organic solvent borne cleaning fluids and handling and storage of waste organic solvents and organic solvent contaminated wastes can also give rise to VOC emissions.

Due to the composition of the preservative, PAH (incl. benzo(a)pyrene) emissions to air and odour are issues for creosote plants. Also the use of water-based preservatives may cause emissions to air, such as ammonia or airborne arsenic compounds (if present in the preservative used).

Traffic on site and combustion processes used to produce electricity, heat or steam may result in emissions to air (carbon, NO_x, SO₂, and dust). In cases where thermal oxidation of VOC containing waste gases is applied as end-of-pipe treatment, this contributes to the air emissions.

Wood processing activities (such as debarking, peeling, cutting, framing, planning, drilling etc.) before treatment can result in dust emissions.

Emissions to water

The use of hazardous chemicals as wood preservatives implies the risk of emitting these substances to water. Drips and spills from any area where wood preservatives are being delivered, stored, mixed, handled or applied and from freshly treated wood might get mixed with precipitation water and lead to contaminated surface runoff water. The contamination depends on the chemicals used and their composition. Substances that might be emitted from wood preservation include: tributyltin, sodium trichromate, copper salts, chromium (III), chromium (VI) oxide, arsenic oxide, ammonia, organic biocides, toluene, xylene, polycyclic aromatic compounds and creosote.

Impregnation processes using water-based salt or emulsion concentrates are basically waste water-free processes. Secondary containment and recirculation systems are used to prevent condensates and cooling water from the impregnation plant or surface water contaminated with aqueous preservatives from entering the soil, the groundwater or adjacent water courses. The water collected or retained can be returned to the production process (closed circuit).

In pressure treatment plants using impregnating oils (creosote), waste water streams are generated only in the form of condensates during depressurization of the treatment vessel and during the vacuum periods. The condensates are collected, allowed to settle and treated in an

activated carbon filter. The water so treated is either reused (closed circuit) or discharged into the public sewer system.

Condensates from steaming and drying processes, unless they are recirculated to the process, may lead to waste water emissions.

Odour

Odour emissions are mainly associated with creosote plants due to the naphthalene content of creosote. In water-based impregnation sometimes the use of ammonia agents can cause some odour impacts on the environment.

Contamination of the soil and pollution of ground water

As for the potential emissions to water, areas of chemical delivery, storage, mixing, handling, application and storage of freshly treated wood bare the risk of soil and ground water pollutions if spills and drips occur and are not properly collected. Prevention of leaks and accidental spills is considered a major issue for the WPC sector.

Waste

Wood impregnation plants may produce relatively small amounts of various non-hazardous and hazardous wastes. Non-hazardous wastes include, for example, untreated wood waste and uncontaminated packaging. Hazardous wastes may include out-of-date and contaminated chemicals, redundant preservative solution, chemical packaging, contaminated wiping, sawdust or other materials used to soak up spills, absorbent, sludge and debris from tanks and process equipment, etc.

Energy

The most energy consuming process is the impregnation under pressure.

Noise

Some noise may arise from wood preservation activities, mainly related to traffic and loading/unloading activities or the mechanical processing of wood.

Information request:

The TWG is asked to consider what the key environmental issues are for the wood preservation sector. Based on the above, a preliminary list of issues is presented in sheet 4 of the excel feedback template (document 4). The TWG is invited to complement any missing key environmental issue and/or pollution parameter and to comment on the proposed list by means of filling in the corresponding columns in the excel sheet providing a rating of the issues (major/intermediate/minor).

Furthermore, TWG members are asked to provide information on which are the issues (air emissions, waste water, waste, spill prevention etc.) covered in permits for WPC plants in their country (Member State representative) or in the permit for their plant/plants (industry representative). Details should be given in which way the issues are covered in the permits (e.g. by means of ELV or performance levels), which parameters are being controlled, units and averages (e.g. concentration or load; long term or short term averages) and on the monitoring conditions. Available permits should be submitted to the EIPPCB.

4. Techniques to consider in the determination of BAT

- 4.1 The TWG is asked to note that it is presumed that the application of BAT will at least achieve the emission limit values (ELVs), equivalent parameters and technical measures, prescribed in Chapter V and Annex VII of the IED. Therefore, techniques which are not able to achieve these levels should not be included in the chapter on 'Techniques to consider in the determination of BAT'.
- 4.2 After screening of the currently available information on the WPC sector, a preliminary list of 'BAT candidates' that could be covered in the WPC BREF is given in document 3 (4.1 – 4.13). It should be noted that this is only a rough sketch of what Chapter 4 may contain, provided to the TWG to facilitate the input and initiate the discussion on BAT candidates.

Information request:

The TWG is invited to add any missing technique that should be considered in the determination of BAT in the corresponding cells in the Excel template (document 4). For all candidate techniques an indication should be given whether information on these candidates (preferably following the 10 headings structure given in the 'BREF Guidance') including performance data can be provided.