MAKING THE INDUSTRIAL EMISSIONS DIRECTIVE FIT FOR THE EU GREEN DEAL (PLASTICS/COAL LINK)

CMW/EEB workshop 15/03/2021

Christian Schaible
Industrial Production Policy Manager

EEB
European Environmental Bureau

IED BASICS: „POLLUTION PREVENTION AND CONTROL“

17.12.2010 EN Official Journal of the European Union L 334/17

DIRECTIVES

DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 24 November 2010
on industrial emissions (integrated pollution prevention and control)
(Recast)

Major provisions

- operation of an IED installation requires a **permit** (activities Annex I)
- **integrated approach to prevent / control impacts** (air, water, waste, chemicals and resource use etc)
- permit shall include: **emission limit values** that are **based on BAT**, appropriate technical requirements, suitable **monitoring** requirements
- **BAT** is defined in Best Available Techniques Reference Documents (BREF) and BAT conclusions (BAT criteria is in Annex III)
  http://eippcb.jrc.ec.europa.eu/reference
- **All** environmentally **relevant industrial sectors;** around **50K installations EU**

The 'Sevilla process'

Industry

Environmental NGOs

EU Member States
+ EFTA and Accession Countries

European Commission/ EIPPCB

TWG
kick-off meeting

Draft 1 (D1)

Draft 2 (D2) *

Information collection (incl. questionnaires)

Comments

Final TWG meeting

Final draft

- **Forum opinion on BREF**
- **Adoption of BAT conclusions through the IED Article 75 Committee**

BAT conclu-sions

*** D2 optional**

Total duration:

- **24 – 29 months (without D2)**
- **29 – 39 months (with D2)**

Joint Research Centre

BEST AVAILABLE TECHNIQUES (BAT)

Definition of Best Available Techniques (BAT): Art. 3(10) IED

Best	Available	Techniques
most effective in achieving a **high general level of protection** of the environment as a whole	developed on a scale to be implemented in the relevant industrial sector, **under economically and technically viable conditions**, advantages balanced against costs	the **technology** used *and* the way the installation is **designed, built, maintained, operated and decommissioned**

BAT-C legally binding: max 4 years compliance deadline after publication date in OJEU

EEB European Environmental Bureau

BEST AVAILABLE TECHNIQUES (BAT) - CRITERIA

ANNEX III

Criteria for determining best available techniques

1. the use of low-waste technology;
2. the use of less hazardous substances;
3. the furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate;
4. comparable processes, facilities or methods of operation which have been tried with success on an industrial scale;
5. technological advances and changes in scientific knowledge and understanding;
6. the nature, effects and volume of the emissions concerned;
7. the commissioning dates for new or existing installations;
8. the length of time needed to introduce the best available technique;
9. the consumption and nature of raw materials (including water) used in the process and energy efficiency;
10. the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it;
11. the need to prevent accidents and to minimise the consequences for the environment;
12. information published by public international organisations.

EEB European Environmental Bureau

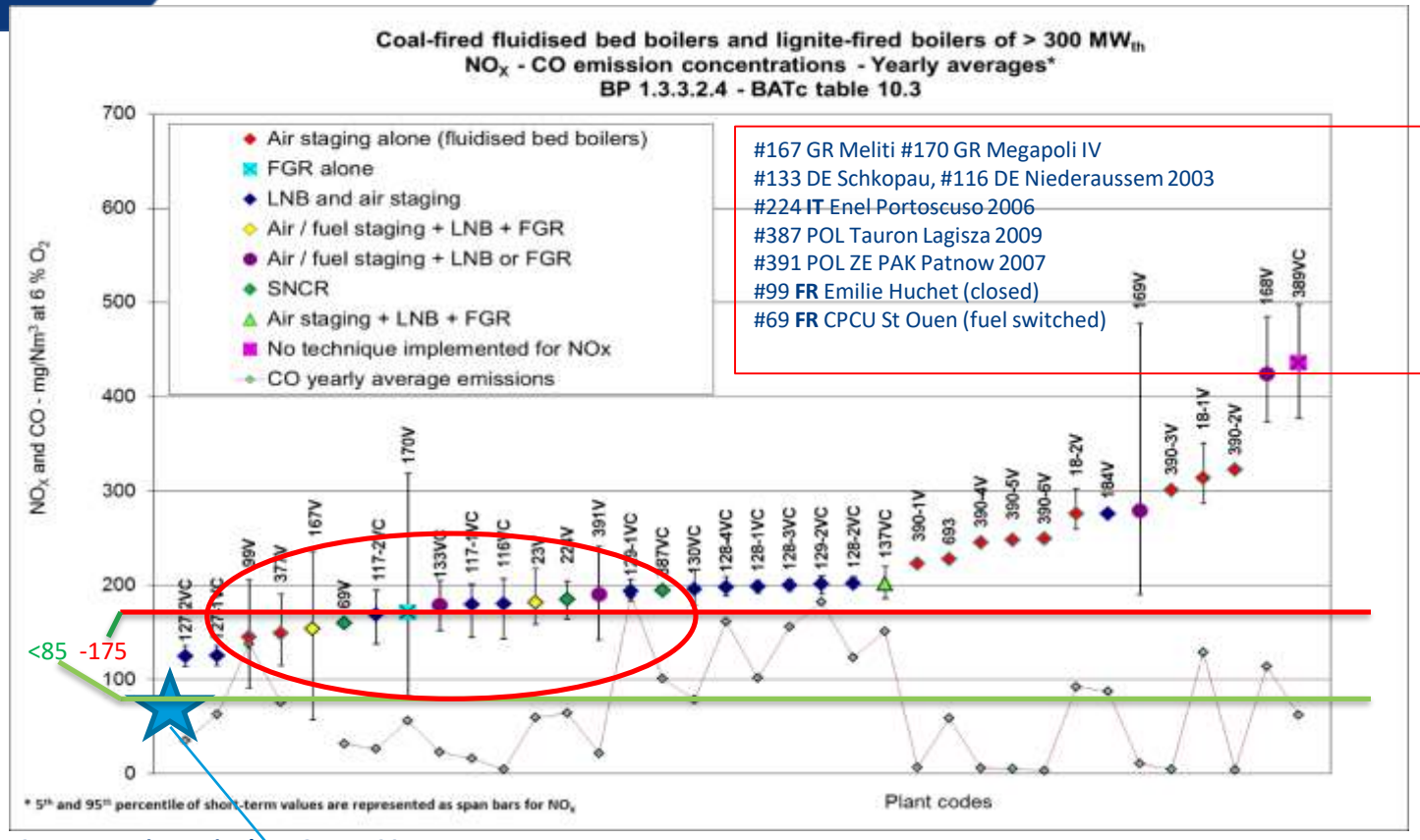
TYPICAL BREF TALK CONSTELLATION

NGO mantra:

- No proper cost internalisation
- Outcome is what counts, techniques catalogue we don't care
- BAT = technical feasibility / most effective to deliver
- Climate change matters / BREF tackles fuel choice / energy efficiency / combined approach
- BAT is to go beyond legal expectations / EQS link at source
- One ref plant around the world is enough to make case (BREF rules)
- Pollution prevention at source / integrated approach
- Drive for improvements and level playing field
- You can derogate later if convinced you have a case

Industry mantra:

- Not proportionate to the benefits (cost burdens), not a key issue / Other sources are worse (traffic, agri etc)
- EU-ETS is the instrument regulating GHG, market approach =cost effective
- 'Double regulation' (REACH, Ecodesign, EU-ETS)
- Technique not applicable
- Too little or Not representative data
- Does not reflect specificity of the sector
- Emerging technique
- Cross media effects
- Fierce competition / level playing field (downwards)



LCP BREF review , Final TWG June 2015

Only 1 LCP in EU <100mg/ Nm³ (Sostanj 6),test runs as from 18/03/2015

- **~66-80mg/Nm³ US Oak Grove (SCR)**
- **72-107mg/Nm³ US Sandow 4 (SCR)**
- **79-109mg/Nm³ US Sandow 5A + 5B (SNCR)**

ENFORCEMENT ISSUES

Main concerns of environmental NGOs

- 1:1 Alignment of emission limits to lenient BAT levels (upper range)
- (Ab)use of Article 15(4) derogations , no harmonized method
- Weak / no sanctions or penalties
- Failures: access to info and public participation
- Transitional derogations LCPs

See details on main points with recommendations

ACCESS TO INFORMATION

Concerns of environmental NGOs

‘Burning the evidence’ investigation results:

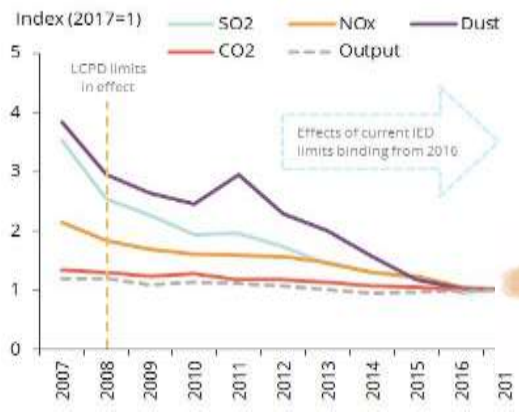
- Attempts to locate permits for plants in fifteen countries (!) were unsuccessful because:
  - **Belgium (Brussels) and Luxembourg** → websites did not exist that allowed for permits to be directly downloaded;
  - **Cyprus, Finland, Hungary and Poland** → no permits to download;
  - **Austria, France, Greece and Romania** → certain information was missing;
  - **Germany, the Netherlands, Spain and the United Kingdom** → sub-national responsibility made it unclear if and where the data was available

- The websites of the ~~**Czech Republic**~~, **Denmark,** ~~**Italy,**~~ **Latvia, Lithuania, Malta, Portugal, Slovakia, Slovenia, Sweden and Belgium (Flanders and Wallonia)**, all met the minimum requirements set in EU law but didn’t go beyond

2017

2020

Coal –link LCPs



Scenario (257 coal/lignite)	Premature deaths/year	Externalised costs in Billion €/year
Baseline (2013)	22,900	~33.3-63.2
True BAT	2,590 (56/day)	3.7 (154M/day)
BREF (upper range)	8,900	12.8-24.3

Further reduction potential (lenient – strict BAT range)

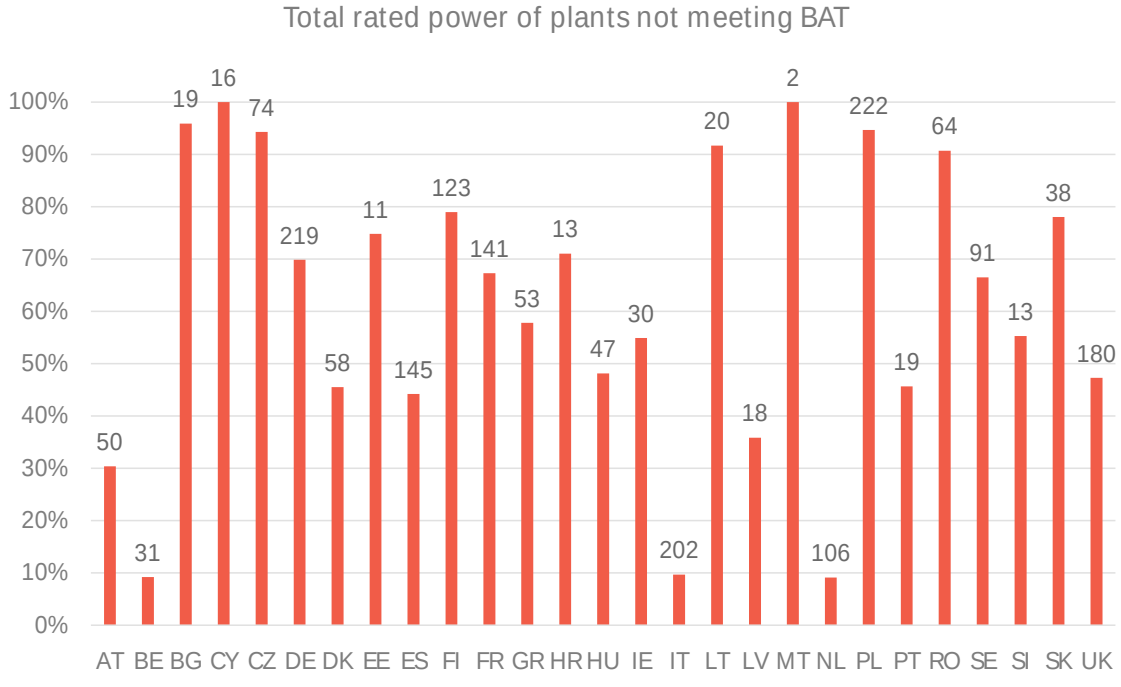
- 66-**91% SO2**
- 51-**79% NOx** **1 EU lignite plant** **can handle lowerBAT**
- 56-**82% Dust**
- 30- **85% Mercury (lignite)** **none meeting the lowerBAT 1µg/Nm3**

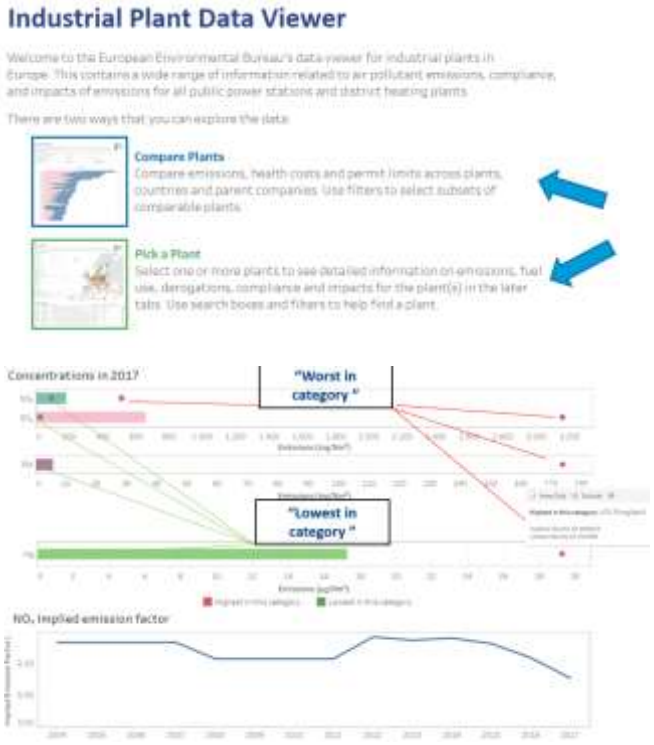
- FDM BREF (coal/fuel oil phase out sugar beet drying pulp drying / solar) 12/2023
- FMP BREF: "BAT is to use electricity generated from fossil free energy sources"

Fuel type	EU average >1000MWth	BAT
Lignite	35.4%	>42-44%
Hardcoal	37.8%	>45-46%

MAKE ENERGY EFFICIENCY BINDING GET RID OF PRE 2002 BOILERS e.g. 42% net for lignite and 46% net for hardcoal boilers

THE GOOD, THE B.A.T. AND THE UGLY





Numbers above the bars: number of LCPs
source http://eipie.eu/projects/ipdv

PLASTICS/PVC: IMPACT/ OPPORTUNITY

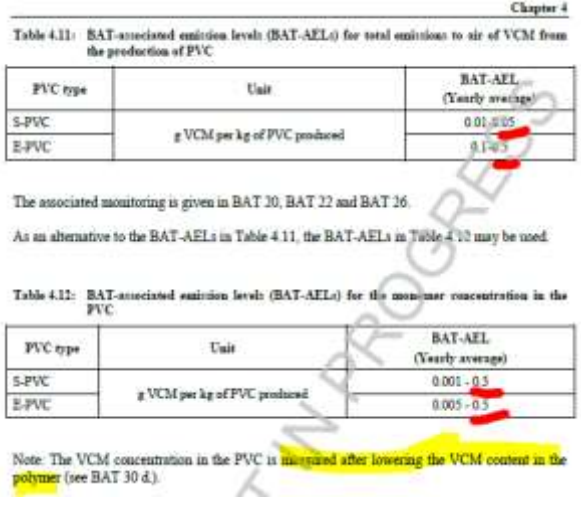
- CAK BREF (Negative BAT hg cells Chlorine production) 12/2017
- Waste Incineration 12/2023 (PCDD/F+HCL/waste sorting BAT9)
- Waste Treatment 08/2022

  (diffuse emissions + mechanical treatment WEEE)
- WGC BREF ongoing

  (polymers)

EEB: Set upper BAT-AEL VCM to max

Table 4.11 0.01-0.03 for S-PVC / 0.1-0.3 for E-PVC
Table 4.12: 0.001 g/kg for both S-PVC and E-PVC



Chapter 4

Table 4.11: BAT-associated emission levels (BAT-AELs) for total emissions to air of VCM from the production of PVC

PVC type	Unit	BAT-AEL (Yearly average)
S-PVC	g VCM per kg of PVC produced	0.01-0.05
E-PVC		0.1-0.3

The associated monitoring is given in BAT 30, BAT 22 and BAT 26.

As an alternative to the BAT-AELs in Table 4.11, the BAT-AELs in Table 4.12 may be used.

Table 4.12: BAT-associated emission levels (BAT-AELs) for the monomer concentration in the PVC

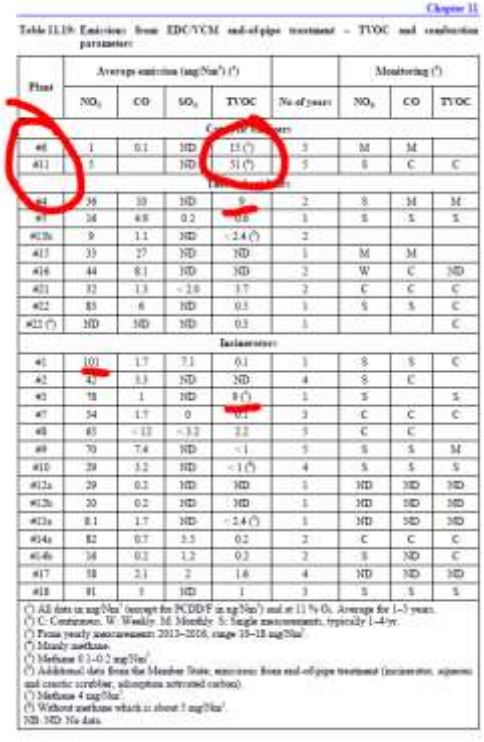
PVC type	Unit	BAT-AEL (Yearly average)
S-PVC	g VCM per kg of PVC produced	0.001 - 0.5
E-PVC		0.005 - 0.5

Note: The VCM concentration in the PVC is measured after lowering the VCM content in the polymer (see BAT 30 d).

Plastics/PVC: impact/opportunity

LVOC BREF (deadline compliance 12/2021

- Closure of PVC plants due to TVOC parameter set to 0.5-5mg/Nm³? *(see backup-slides for names)*
- NOx parameter Olefin crackers chemical industry (INEOS Antwerpen etc)



Chapter 11

Table 11.19: Emissions from EDC/VCM end-of-pipe treatment – TVOC and combustion parameters

Plant	Average emission (mg/Nm³) (¹)					Monitoring (²)		
	NO_x	CO	SO_2	TVOC	No of years	NO_x	CO	TVOC
Catalytic oxidisers								
#6	1	0.1	ND	15 (³)	5	M	M	
#11	1		ND	51 (⁴)	5	S	C	C
Thermal oxidisers								
#4	36	10	ND	9	2	S	M	M
#5	34	6.9	0.2	0.5	1	S	S	S
#13b	9	1.1	ND	< 2.4 (⁵)	2			
#13	33	27	ND	ND	1	M	M	
#16	44	8.1	ND	ND	2	W	C	ND
#21	32	1.3	< 2.0	3.7	2	C	C	C
#22	85	6	ND	0.5	1	S	S	C
#23 (⁶)	ND	ND	ND	0.3	1			C
Incinerators								
#1	101	1.7	7.1	0.1	1	S	S	C
#2	42	1.3	ND	ND	4	S	C	
#3	78	1	ND	8 (⁷)	1	S		S
#7	54	1.7	0	0.4	3	C	C	C
#8	85	< 12	< 3.2	2.2	5	C	C	
#9	70	7.4	ND	< 1	5	S	S	M
#10	29	3.2	ND	< 1 (⁸)	4	S	S	S
#12a	29	0.2	ND	ND	1	ND	ND	ND
#12b	20	0.2	ND	ND	1	ND	ND	ND
#13a	8.1	1.7	ND	< 2.4 (⁵)	1	ND	ND	ND
#14a	82	0.7	3.5	0.2	2	C	C	C
#14b	36	0.2	1.2	0.2	2	S	ND	C
#17	58	2.1	2	1.6	4	ND	ND	ND
#18	81	1	ND	1	3	S	S	S

(¹) All data in mg/Nm³ (except for PCDD/F in ng/Nm³) and at 11 % O_2. Average for 1–3 years.
(²) C: Continuous, W: Weekly, M: Monthly, S: Single measurements, typically 1–4/yr.
(³) From yearly measurement 2013–2016, range 10–18 mg/Nm³.
(⁴) Mainly methane.
(⁵) Methane 0.1–0.2 mg/Nm³.
(⁶) Additional data from the Member State; emissions from end-of-pipe treatment (incinerator, quench and caustic scrubber, adsorption activated carbon).
(⁷) Methane 4 mg/Nm³.
(⁸) Without methane which is about 5 mg/Nm³.
ND: MD: No data.

Example plants
No plant in the EU is known to apply waste gas treatment of the EDC cracker flue-gas.

Two plants use catalytic oxidisers, one in combination with an activated carbon adsorber. These plants show low emissions of NO_X, but high emissions of organic compounds (compared to thermal oxidisers and incinerators) (see Table 11.19 and Table 11.20 below). They are therefore not considered BAT candidates.

Plastics/PVC: impact/opportunity

TEXTILES BREF (review ongoing)

- Defining "micro-plastics"
- set abrasion standards, prevent micro-pollution release from synthetic textiles?
- Micro-filtration (membrane) all synthetic fibre production?

BAT 2. In order to improve the overall environmental performance, BAT is to establish, maintain and regularly review (including when a significant change occurs) an inventory of inputs and outputs, as part of the environmental management system (see BAT 1), that incorporates all of the following features:

(i) information about the production process(es), including:
(a) simplified process flow sheets that show the origin of the emissions;
(b) descriptions of process-integrated techniques and waste water/waste gas treatment techniques to prevent or reduce emissions, including their performance (e.g. abatement efficiency);
(ii) information about the quantity and characteristics of materials used, including textile materials and process chemicals (see BAT 14);
(iii) information about water consumption;
(iv) information about energy consumption;
(v) information about the quantity and characteristics of the waste water streams, such as:
(a) average values and variability of flow, pH, temperature, and conductivity;
(b) average concentration and mass flow values of relevant substances/parameters and their variability (e.g. COD/TOC, nitrogen species, phosphorus, metals, priority substances, microplastics)*;
(c) data on toxicity and biodegradability (e.g. BOD_5, BOD_5 to COD ratio, Zahn-Wellens test, biological inhibition potential (e.g. inhibition of activated sludge));
(vi) information about the characteristics of the waste gas streams, such as:
(a) average values and variability of flow and temperature,
(b) average concentration and mass flow values of relevant substances/parameters and their variability (e.g. dust, organic compounds),
(c) flammability, lower and higher explosion limits, reactivity;
(d) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. water vapour, dust);

BZ-JK-JG-EIPPCB/TXT_Draft 1 December 2019 721

BAT 13. In order to improve the overall environmental performance, BAT is to elaborate and implement a chemicals management system (CMS) as part of the EMS (see BAT 1) that incorporates all of the following features:

I. process chemicals procurement policy to select process chemicals and their suppliers with the aim to minimise the use of hazardous chemicals such as substances of very high concern and to avoid the procurement of excess amount of process chemicals. In order to reduce emissions to air, the selection of process chemicals may be based on emission factors (see Section 5.9.1);
II. anticipatory monitoring of regulatory changes related to hazardous chemicals and safeguarding compliance with applicable legal requirements;
chemicals inventory (see BAT 14);
III. identification of the process chemicals pathways through the plant (from procured process chemicals to products, waste and emissions);
IV. assessment of the risks associated to the chemicals, based on the chemicals' hazards, concentrations and amounts. This may include an estimation of their emissions to the environment;
V. regular (e.g. annual) check aiming at identifying potentially new available and safer alternatives to the use of hazardous chemicals (e.g. changes of process(es) or use of other chemicals with no or lower environmental impact such as enzymes);
VI. goals and action plans to avoid or reduce the use of hazardous chemicals;
VII. development and implementation of procedures for the handling, storage, use and return of process chemicals (see BAT 20).

The criteria for selecting process chemicals and their suppliers may be based on certification schemes or standards. In that case, the compliance of the process chemicals and their suppliers with these schemes or standards is regularly verified.

Applicability
The level of detail of the CMS will generally be related to the nature, scale and complexity of the plant.

[This BAT conclusion is based on information given in Section 4.1.6.1]

Plastics/PVC: impact/ opportunity

TEXTILES BREF (review ongoing)

- Push on TSS parameter
- Get more data microplastics (relevance, techniques)

Chapter 5

Table 5.3: BAT-associated emission levels (BAT-AELs) for direct discharges to a receiving water body

Substance/Parameter		Activities / processes	BAT-AEL (1) (mg/l)
Adsorbable organically bound halogens (AOX) (2)		All activities / processes	0.1–0.5
Chemical oxygen demand (COD) (3)			40–120 (4)
Hydrocarbon oil index (HOI)			1–10
Metals / metalloids	Antimony (Sb)	Pre-treatment and/or dyeing of polyester	0.1–0.4
		Finishing with flame retardants using antimony trioxide	
	Chromium (Cr)	Dyeing with chromium-containing dyes	0.01–0.3
	Copper (Cu)	All activities / processes	0.03–0.4
	Nickel (Ni)		0.01–0.5
	Zinc (Zn)		0.04–0.5
Sulphide, easily released (S^{2-})		Dyeing with sulphur dyes	0.3–1
Total nitrogen (TN)		All activities / processes	5–20 (5)
Total organic carbon (TOC) (3)			13–40 (6)
Total phosphorus (TP)			0.4–3
Total suspended solids (TSS)			5–45

(1) The averaging periods are defined in the general considerations.
(2) The BAT-AELs only apply when the substance/parameter concerned is identified as relevant in the waste water stream based on the inventory of inputs and outputs mentioned in BAT 2.
(3) Either the BAT-AEL for COD or the BAT-AEL for TOC applies. The BAT-AEL for TOC is the preferred option because TOC monitoring does not rely on the use of very toxic compounds.
(4) The upper end of the BAT-AEL range may be up to 150 mg/l when the amount of waste water discharged is less than 25 m^3/t of treated textile materials.
(5) The BAT-AEL may not apply when the temperature of the waste water is low (e.g. below 12 °C) for prolonged periods.
(6) The upper end of the BAT-AEL range may be up to 50 mg/l when the amount of waste water discharged is less than 25 m^3/t of treated textile materials.

3.4.19 Microplastics

Microplastics is a generic term for very small fragments of plastics with an approximate length of 1 nm to 5 mm. [131, ECHA 2019]

A number of studies were made available for the review of the BREF regarding the presence of microplastics in water bodies (e.g. [127, Austrian EPA 2015]) or in waste water (e.g. [128, Danish EPA 2017]). One of these studies ([129, Danish EPA 2015]) points to synthetic textiles as a source of secondary microplastics, i.e. microplastics resulting from the fragmentation, weathering or maintenance of larger items. For instance, the study considers the following pathways for releases of synthetic fibres: laundering, synthetic cloth used for wet cleaning, synthetic fibres removed by vacuum cleaning or washing of floors and furniture surfaces, fibres released outdoors from clothing and outdoor textiles. This corresponds however to the use phase of the textiles and not to the production phase which is the scope of this BREF.

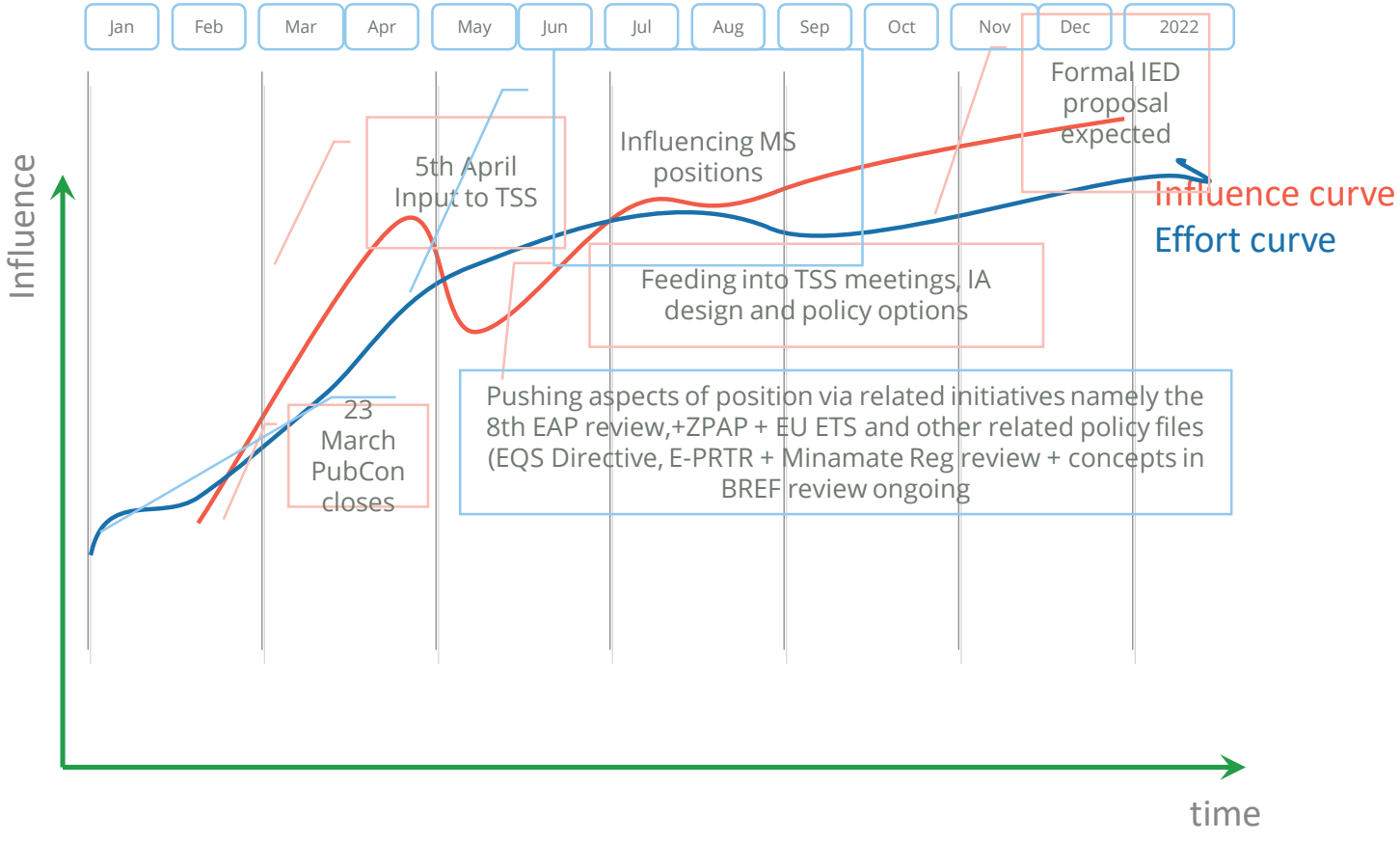
No information was collected on the emissions of microplastics to water from the production of textiles via the data collection (see Section 3.1) but a study carried out by Swerea IVF [125, SVEREA IVF 2018] shows that microplastics were found in the effluents of five textiles plants in Sweden. Emissions of microplastics therefore seem relevant for the textiles sector, as they may be for other industrial or non-industrial activities, but the significance of these emissions has not been established. According to the study 'Swedish sources and pathways for microplastics to the marine environment' [126, IVL 2016], the main sources of microplastics are road wear and abrasion of tyres, artificial turfs, laundry, industrial production and handling of plastic pellets, and protective and decorative coatings on buildings, although the study underlines that more reliable data are needed.

In conclusion, at the time of drafting this document, there was little information available as to the emissions of microplastics to water from textile production facilities, in terms of emissions actually monitored and therefore in terms of the significance of these emissions.

It is to be noted nevertheless that even though microplastics emissions are not monitored directly, some microplastics would be covered by the parameter TSS, as the glass fibre filters used for monitoring TSS typically show pore sizes around 1 µm. [130, STERLITECH 2019] The parameter TSS is addressed in Section 3.4.6.

More info? Jean-Luc.Wietor@eeb.org

IED Review: timeline 2021



“TIME FOR BIER?”

IED to become the new “Zero-Pollution industrial production regulation” / Best Industrial Environmental performance Regulation

Soil / resources

Energy

Air

Water

NGO (EEB) Spirit

NGO “spirit”?

Fundamental “game changers”

- **Scope redesign** (rewrite of Annex I)
- **New BAT determination method** and definition
- **Retrict flexibility** for MS in implemenation
- **New powers for NGO in standards making and adoption process**
- **Improved compliance promotion** for Environmental Quality standards (interactive)
- **Benchmarking tools** (data transparency / comparbility) and rating tools (BAT label for supply chain due diligence?)

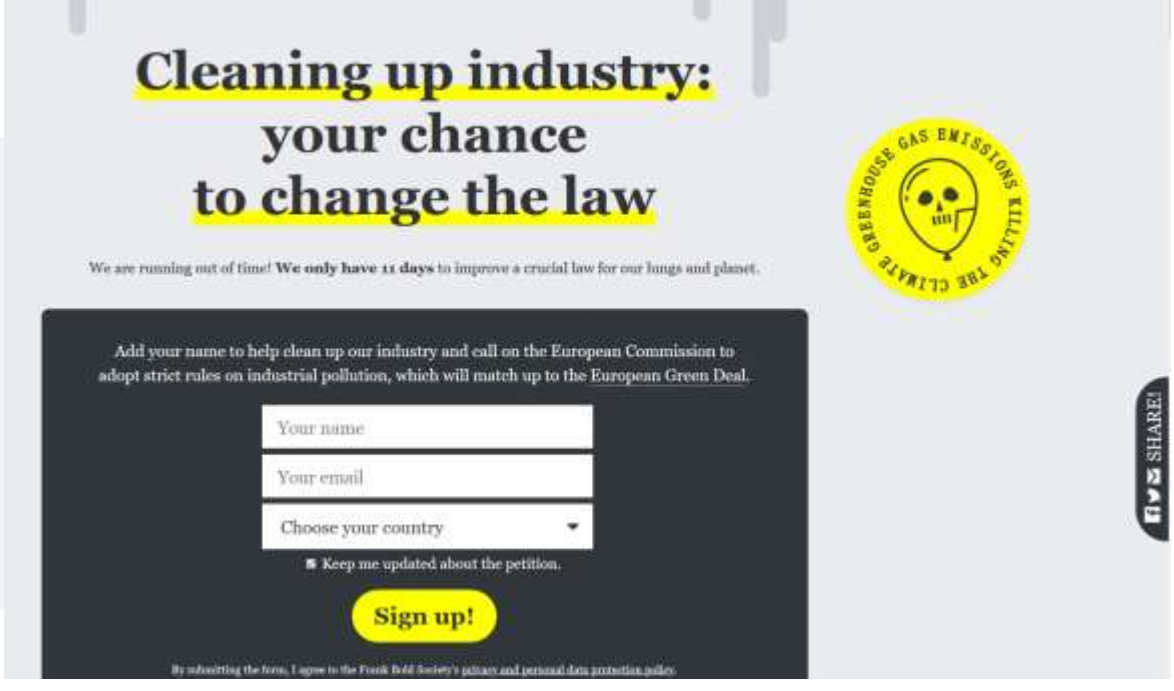
+

- **Internalisation of external costs**
- Climate action included, secure “**combined approach**” with EU ETS / climate instruments
- **Target setting on the various media goals** (new EU safety net approach)
- **Dynamic instrument** to push for further pollution **prevention at source** (more pull to stimulate deeper process changes, not end of pipe)

=

- **The integrated approach is aligned to Zero Pollution Ambition with clear direction to deliver by latest 2040 (outcomes)**
- **End of “technology neutrality” dogma**
- **The instrument provides the tools and incentives for continuous progress also in accountability of decision makers (standards, enforcement)**

SIGN(ED) THE PETITION?



https://www.cleantheindustry.eu

EEB
European
Environmental
Bureau

THANKS FOR YOUR ATTENTION!

Christian.Schaible@eeb.org

www.eeb.org

@Green_Europe

@EuropeanEnvironmentalBureau

http://eipie.eu/

http://beyond-coal.eu/