

Für Mensch & Umwelt

**Presentation to a Delegation of Israeli Chemistry
Industry Representatives
23rd May 2019**

Industrial Emission Directive and Federal Immission Control Act

Rainer Remus
Section III 2.1 / Cross-sectoral aspects of industry
Federal Environment Agency
DESSAU-ROßLAU

Overview

1. Examples of important environment legislation for Europe and Germany
2. Industrial Emission Directive – IED
3. Federal Immission Control Act (FICA)
4. Transposition of IED and BAT-conclusions into national legislation
5. Examples for prospective changes of the TA Luft
6. Next steps in the TA Luft review process

1. Examples of important environment legislation

Europe/Germany (red:subject of industrial installation licensing¹⁾)

Legislation/ Regulations	Chemicals law/Hazardous substances	Major Acci- dents	Federal Immission Control Act	Manage- ment systems	Water/ wastewater	Soil protectio n	Waste legislation
International (D. = Directives)	i.e. CLP D. (EG) Nr. 1272/2008 EU-VOC- directive 1999/13/EG → integrated in IED	Seveso-III D. 2012/18/EU	Air quality D. NE(R)C D. IPPC/IED Kyoto PRTR MCPD	EMAS	Water Framework Directive and Daughter Directives Drinking Water D.		Waste frameworkD. WEEE D. Packaging D. Battery D. ELV D.
National laws		Federal Immission Control Act		Audit Act (UAG)	Water Resources Act (Art. 57 – 59)	Soil Protection Act	Circular Economy Act ElektroG (WEEE Act), /BattG
Ordinances		12th Federal Immission Control Ordinance	4th „Installations“ 9th „permitting process“ 13th „Large combustion plants“ 17th „Waste incineration“ 31st „VOC using solvents“	EMAS- Ordinance	Waste Water Ordinance and Annexes Surface Water Ordinance AwSV²⁾ Drinking Water Odinance		Commercial waste O. Landfill O. Waste management facilities Wood waste-/waste oil-/End of life vehicle/ Packaging O.
Administrative regulations			TA Luft (AIR) TA Noise GIRL (odour exposure guideline)		Classification of substances hazardous to waters		
Executive recommen- dations, others		KAS	LAI BAT Conclusions-IPPC Fomaldehyde	DIN ISO 50001, 14001	BLAK	LABO	LAGA

¹⁾ Not claiming to be exhaustive ²⁾ plants dealing with substances hazardous to waters

2. IPPC/IED: How did it all start in the 90th?

European
Commission



How to achieve a **modern** and **effective permitting** system for **industrial installations** ...

- ...with a **high level of environmental protection** all over Europe,
- ...**demanding** and **encouraging innovative**,
- ...**taking into account the different initial situations in the MS?**

2. Integrated Pollution Prevention and control Directive – IPPC Directive

1996: COUNCIL DIRECTIVE 96/61 / EC of 24 September 1996 concerning integrated pollution prevention and control (Partly amended 2008/1/EG)

Problem: No clearly defined BAT-AEL (BAT associated emission levels), *Consideration* of BAT yes, but no mandatory application→

2. Industrial Emissions Directive - IED

2010: 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) Industrial Emission Directive

- **What is the IED? What is the IED aiming at?**
- **What means BAT and what is a BREF (and what it is not!)?**

2. Industrial Emissions Directive - IED

The IED provides a common framework for the regulation of industrial emissions throughout the 28 EU member states.



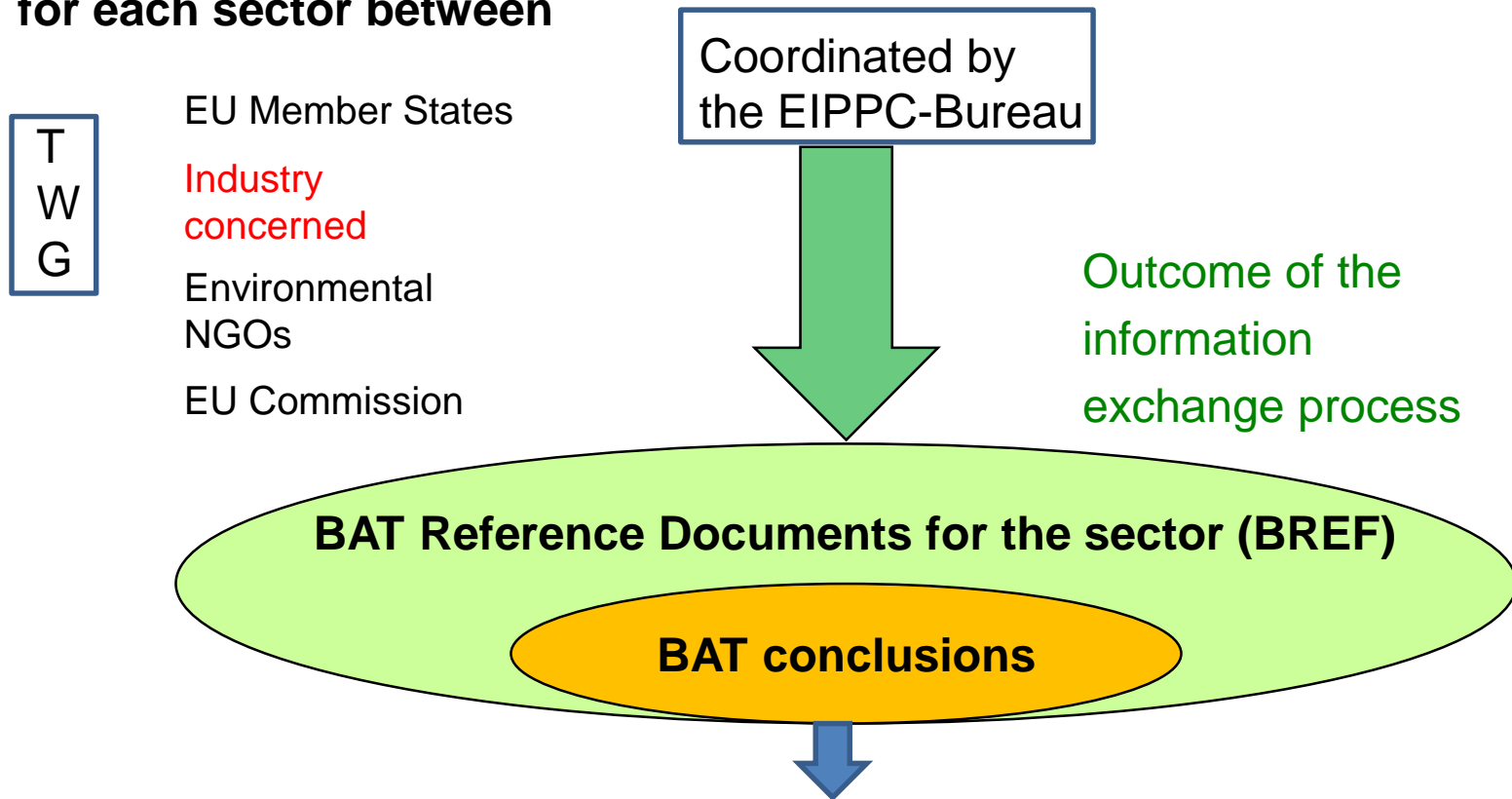
Incorporation of 6 former sector-specific EU directives on large combustion plants, waste incineration, use of solvents and three directives on waste from the titanium dioxide industry (2010/75/EU)

<http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=URISERV:ev0027&from=EN>

The Directive covers around 52.000 installations- all these installations need a permit (9800 in Germany).

2. Industrial Emissions Directive - IED

Core element of the IED (Art. 13): Identification of BAT by an **information exchange process, organised by the European Commission** for each sector between



Once adopted by the Art. 75 Committee BAT conclusions are published as **Implementing Decisions** in the Official Journal of the EU

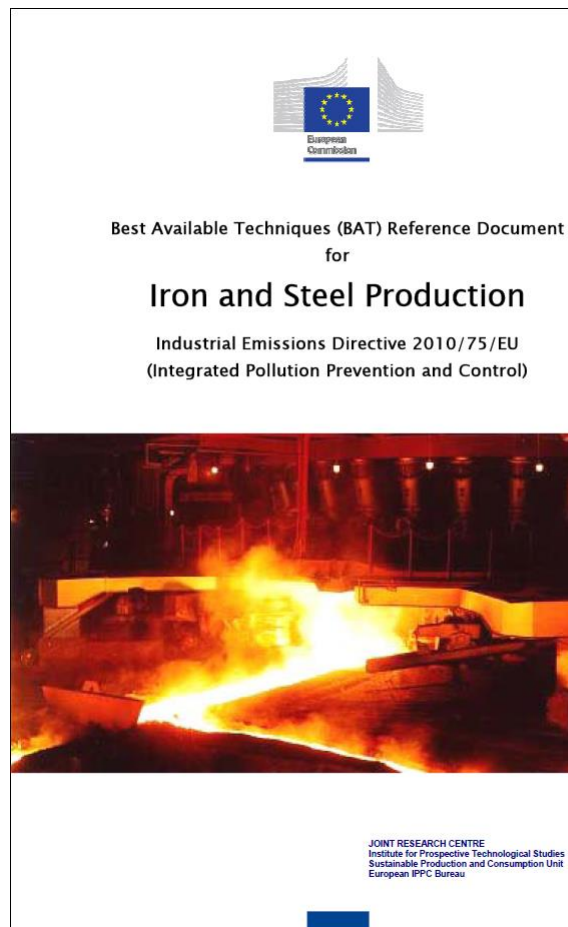
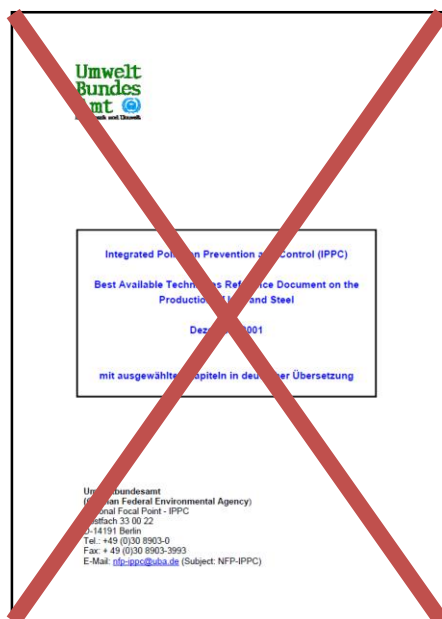
2. Industrial Emissions Directive - IED

BAT under Article 3 (10) - definition

- ‘**BEST**’ most effective in achieving **A HIGH GENERAL LEVEL** of protection of the environment **AS A WHOLE**
- ‘**AVAILABLE**’ developed on a scale which allows implementation in the relevant industrial sector, under **ECONOMICALLY** and **TECHNICALLY VIABLE** conditions, considering the costs and advantages
- ‘**TECHNIQUES**’ ... **BOTH** the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned

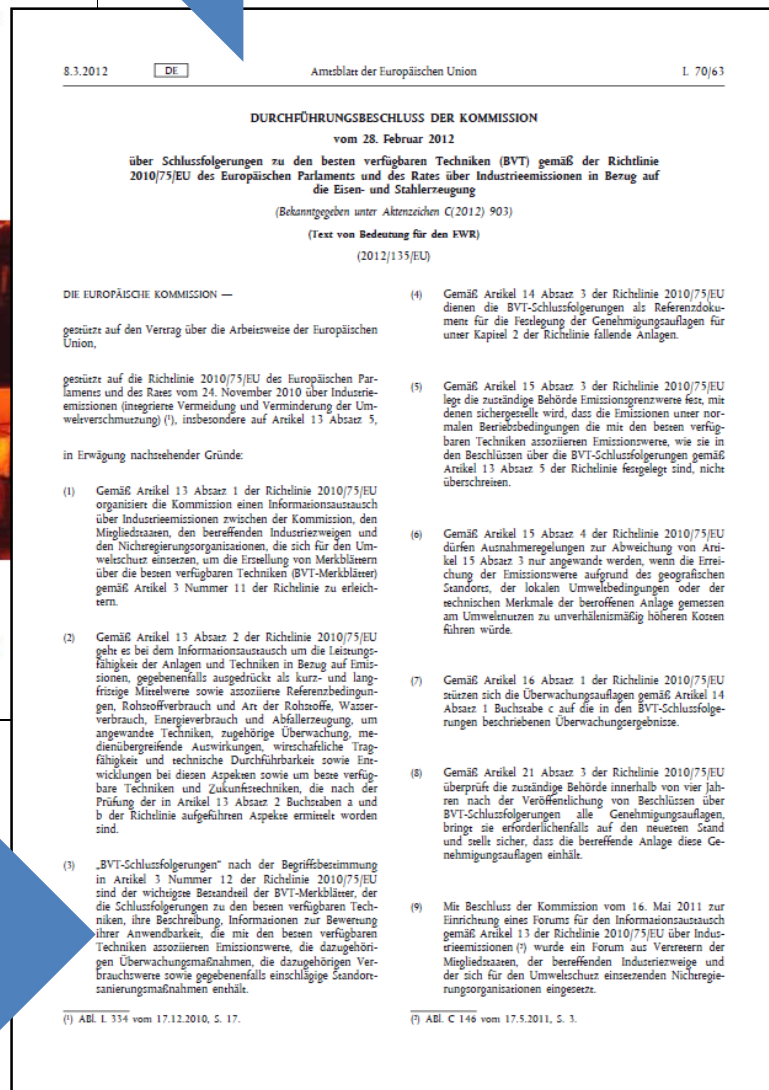
From 1 to 2 documents...

One IPPC BREF



BAT Conclusions
(Decision) legal doc.

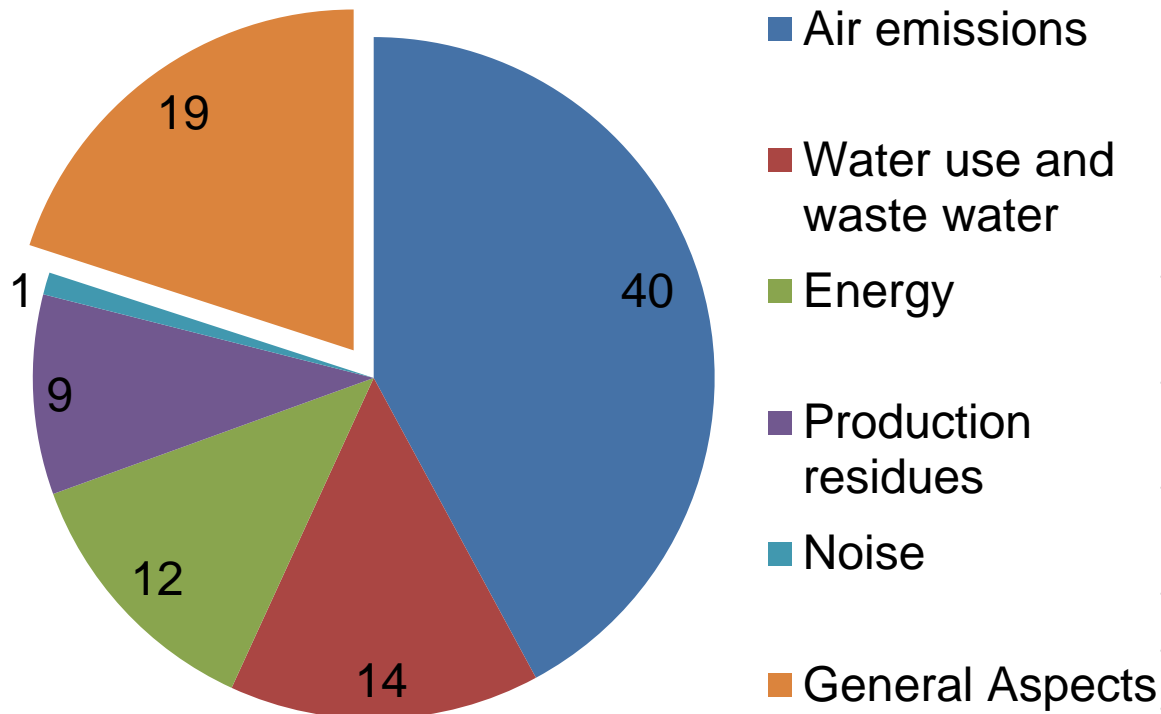
BAT Reference Document (BREF)



2. Industrial Emissions Directive - IED

BAT CONCLUSIONS FOR I & S PRODUCTION

No. of BAT Conclusions referring to...



76 **process-specific** BAT Conclusions

- thereof 30 BAT conclusions including „BAT-associated emission levels“ (BAT-AELs)

+19 BAT Conclusions on general aspects:

- Environment Management Systems;
- energy, raw material and water consumption,
- waste water and waste management,
- diffuse emissions,
- monitoring,
- plant decommissioning and
- noise

2. Industrial Emissions Directive - IED

Objectives	IED
<i>Proportional, participative, harmonising?</i>	information exchange process: EIPPCB → BAT → BREF → BAT AEL-Conclusion achieving level playing field
<i>Encouraging, innovative?</i>	BREF-Review scheduled appr. 8 years
<i>Effective? Covering industrial installations?</i>	Obligation to obtain a permit, obey BAT-Conclusions for new and existing installations in 35 sectors, inspection plans
<i>Substantial, modern?</i>	Integrated approach, Environment as a whole, cross-sectoral, cross-media approach, multi pollutant, (precautionary principle first)
<i>Flexible?</i>	Taking into account specific technical characteristics, local circumstances and the geographical location ; transition period
<i>Verifiable, checkable?</i>	Monitoring and reporting obligations of MS

2. Industrial Emissions Directive - IED

Current Work programme set up by the Art. 13 Forum:

Industrial sector- BREF	
Waste treatment (WT)	(Decision published 8/2018)
Food, drink, milk (FDM)	(Decision will be published late 2019)
Waste incineration plants (WI)	(Decision will be published late 2019)
Surface treatment using solvents (STS)	(Final TWG Meeting 12/2018)
Ferrous metals processing (FMP)	(Draft 1 3/2019)
Common Waste Gas Treatment in the Chemical Sector (WGC)	(ongoing)
Textiles industry (TXT)	(ongoing)
Slaughterhouses and Animal by-products Industries (SA)	(ongoing)
Smitheries and Foundries industry (SF)	(ongoing)

2. Industrial Emissions Directive - IED

„In a nutshell“:

- **Best Available Techniques** for installations listed in Annex 1 of the IED is defined by Europe
- **No installation can be operated without permit based on BAT conclusions**

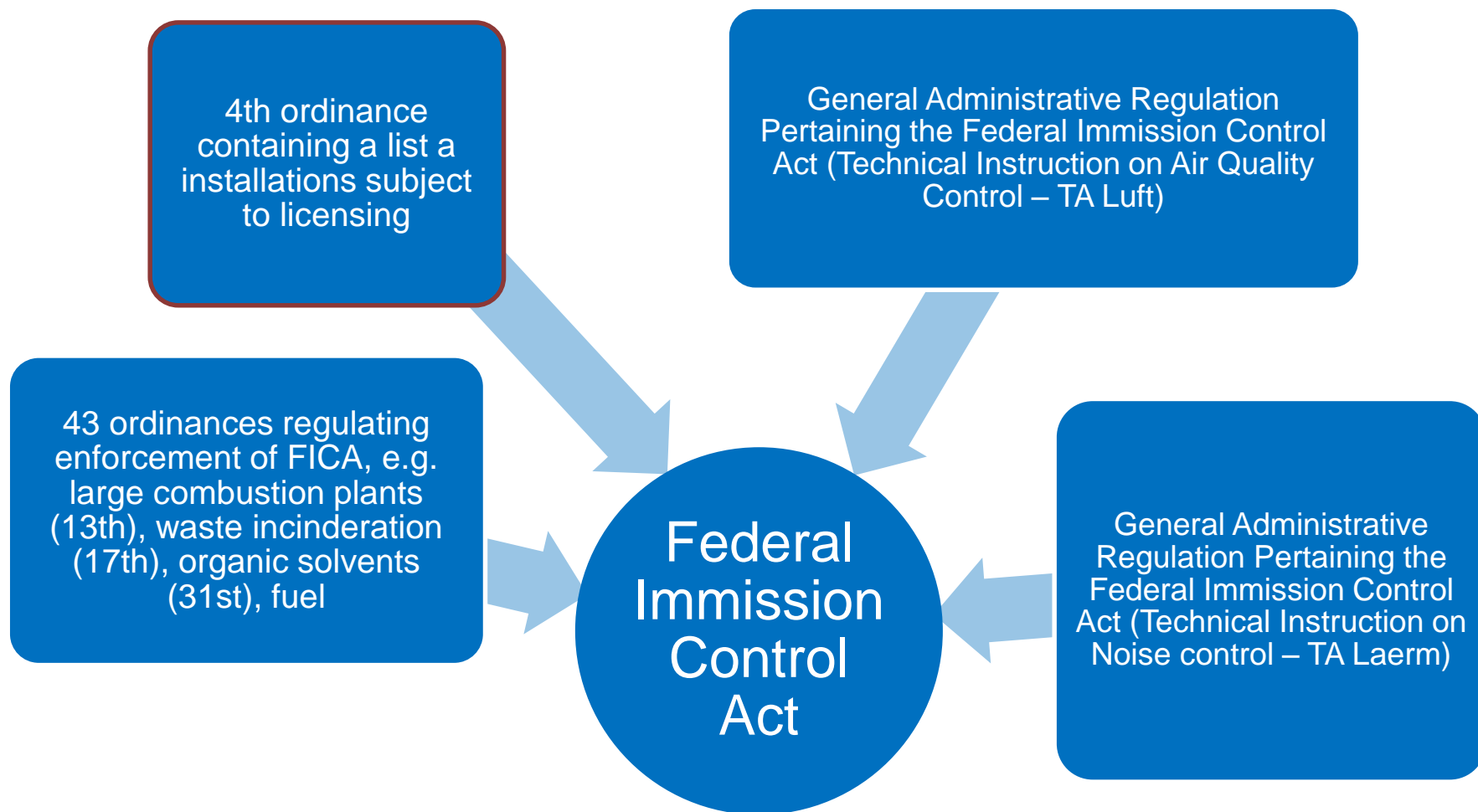
Question:

How becomes the **IED** transposed into national law? → Amendment of FICA

And how become **BAT Conclusions** transposed into national law?

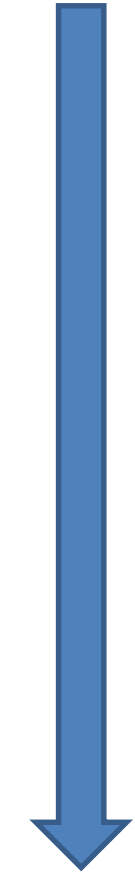
3. FEDERAL IMMISSION CONTROL ACT

General composition of the Federal Immission Control Act



4. Transposition of **IED** and **BAT** conclusions into national legislation (May 2013)

- Amendements of **4th ordinance**
- Art. 48: **Within one year** the Federal Environment Ministry together with UBA and Federal States Experts carry out a comparison with existing legislation
- New legally binding regulations for concerned media
 - ✓ **Water water ordinances and its annexes for industrial sectors**
 - ✓ **13th, 17th ordinance and TA Luft**
 - ✓ Other affected permits for all installations of the sector
- Art. 52: Local competent authorities check the existing permits for all installations of the sector
- **Issue of new permits** (if necessary) by local authorities
- Technical adaptation to new permit conditions (by owner or operator)
- Art. 7, 12 and 48: **Application of BAT-AEL, derogation is possible but only in case that technical characteristics of a plant lead to disproportional costs**



4 Years

4. Transposition of IED into national legislation

■ Annex 1 of the IED

1.2. Refining of mineral oil and gas

4.1. Production of organic chemicals, such as:

- (a) simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic);
- (b) oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters and mixtures of esters, acetates, ethers, peroxides and epoxy resins;
- (c) sulphurous hydrocarbons;
- (d) nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds or nitrate compounds, nitriles, cyanates, isocyanates;
- (e) phosphorus-containing hydrocarbons;
- (f) halogenic hydrocarbons;
- (g) organometallic compounds;
- (h) plastic materials (polymers, synthetic fibres and cellulose-based fibres);
- (i) synthetic rubbers;
- (j) dyes and pigments;
- (k) surface-active agents and surfactants.

4.2. Production of inorganic chemicals, such as:

- (a) gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride;
- (b) acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids;
- (c) bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide;
- (d) salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate;
- (e) non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide.

4.3. Production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)

4.4. Production of plant protection products or of biocides

4.5. Production of pharmaceutical products including intermediates

4.6. Production of explosives

4. Transposition of IED into national legislation

- Amendements of 4th ordinance, the list of installations subject to licensing (app. 300 types of installations): Restructured and reviewed list according to Annex 1 of the IED

No.	Type of installation	Type of licensing procedure	IED installation Art. 10 2010/75/EU
4.	Chemische Products, Pharmaceuticals, Mineral Oil Refining and further Processing		
4.1.1	Hydrocarbons (linear or cyclic, saturated, unsaturated, aliphatic or aromatic),	G	E
4.1.2	Installations for the Production of Oxygen-Containing Hydrocarbons	G	E
4.1.3	Sulfurous Hydrocarbons	G	E
4.1.4	Nitrogenous Hydrocarbons such as Amines, Amides, Nitroso-, Nitro- or Nitrate- compounds, Nitriles, Cyanates, Isocyanates,	G	E
4.1.5	Phosphorus Hydrocarbons	G	E
4.1.6	Halogenated Hydrocarbons	G	E
4.1.7	Organometallic compounds,	G	E
4.1.8	Plastics (synthetic resins, Polymer, Chemical fibers, fibers based on cellulose or pulp),	G	E
4.1.9	Synthetic Rubber	G	E
4.1.10	Colourant and pigments and precursor for Colourants and Coating compounds	G	E
4.1.11	Tensides,	G	E
4.1.12	Production of Gases such as Ammonia, Chlorine, hydrogen chloride, Fluor and hydrogen fluoride, Carbon Oxides, Sulfuric compounds, nitrogen oxides, Hydrogen, sulphur dioxide, Phosgene,	G	E
4.1.13	Acids such as Chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, Oleum, sulfurous acid,	G	E
4.1.14	Chemical Bases such as ammoniahydroxide, potassium hydroxide, Sodium hydroxide,	G	E
4.1.15	Salts such as Ammonium Chloride, Potassium Chlorate, Potassium Carbonate, Sodium Carbonate, Perborate, Silver Nitrate	G	E

Type E/G: IED installation, public participation

Type G only: **no** IED installation, but public participation

4. Transposition of IED into national legislation

- Amendments of 4th ordinance, the list of installations subject to licensing (350 types of installations): Restructuring and review of the list according to Annex 1 of the IED

No.	Type of installation	Type of licensing procedure	IED installation Art. 10 2010/75/EU
4.1.16	Non Metallics, Metall Oxides or other inorganic Compounds such as Calcium carbide, Silicon, Silicon carbide, inorganische Peroxide, Sulfur,	G	E
4.1.17	phosphorous-, nitrogenous- or potassium-based Fertilizers	G	E
4.1.18	Plant protection products, Pestizides or Biozides,	G	E
4.1.19	Pharmaceuticals including intermediate Products,	G	E
4.1.20	Explosives,	G	E
4.1.21	Substances or Groups of Substances other than No. 4.1.1 to 4.1.20	G	E
4.1.22	- Basic organic Chemical, - Basic inorganic Chemical, - phosphorous-, nitrogenous or potassium based Fertilizers , - Basic material for Plant protection products and Biozides - Basic Pharmaceuticals using a Chemical or Biological Methode or - Explosives, In Conjunction, with several Units in Parallel being connected in a functional respect (integrated chemical Installation);	G	E
4.2	Installations, for grinding or mechanical mixing, packaging handling of Plant protection products, Pesticides, Biozides or their active substances, exceeding a handling capacity of 5 Tons per day;	V	
4.4	Installation for the Distillation or Refinement of Processing of Crude Oil or Petroleum Products		
4.4.1	Mineral Oil Refineries	G	E
4.4.2	Lubricants Refineries	G	
4.4.3	Gas Refineries	G	E
4.4.4	Petrochemical installations or Production of Paraffin;	G	

Type V: simplified procedure, no public participation

4. Federal Immission Control Act

Administrative regulation: **Technical Instruction on Air Quality Control (TA Luft)**

THE CENTRAL IMMISSION PROTECTION ADMINISTRATIVE REGULATION FOR INSTALLATION SUBJECT TO LICENSING

- Norm-defining administrative regulation pertaining the FICA, legally binding for authorities
- No.4 **Requirements for the Protection** against Harmful Effects on the Environment (= Immissions) and No. 5 **Requirements to Provide Precautions** against Harmful Effects on the Environment (= Emissions)
- Base for more than 52.000 installations (9800 IED installations)
- **General binding rule**, thus equal treatment of comparable installations
- Conventions: flexible instruments such as dynamic clauses, aiming for minimisation and target values, part. consideration of existing installations,
- Necessary leeway (vs. ordinances)
- **Simplifies the permitting process for authorities and guarantees legal security and planning reliability for industry**

4. Federal Immission Control Act

TA Luft– contents

1. Scope of Application
 2. Definitions of Terms and Units of Measurement
 3. General Principles for Granting a Permit, Provisional decisions and Permissions for early Start
 4. Requirements to Provide Protection against Harmful Effects on the Environment
 5. Requirements to Provide Precautions against Harmful Effects on the Environment
 - 5.1 *general information*
 - 5.2 **general requirements for limiting emissions**
 - 5.3 **measuring and monitoring of emissions**
 - 5.4 **special provisions for certain types of installations**
 - 5.5 *discharge of exhaust gases*
 6. Subsequent orders (remediation of old installations)
 7. Cancellation of Regulations
 8. Entry into Force
- appendixes : 1 – 13

4. Federal Immission Control Act

Administrative regulation: TA Luft – General binding rules

TA LUFT-HISTORY

Under Federal Immission Control Act:

- 1974
- Reviewed 1986
- Comprehensive review 2002
- Currently being reviewed (review started 2014)

Main reason for the revision: **Implementation of conclusions of best available Techniques (BAT)**

4. Transposition of **BAT** conclusions into national legislation

National Transposition of TA Luft relevant BVT-conclusions with AEL (associated emissions levels):

- Until 2014:

TA Luft committee/Federal Environment Minister/German Conference of Environment Ministers → **12 executive recommendations** → TA Luft review

- Since early 2014:

General sectoral administrative regulations by the Federal Environment Minister (according to § 48 Federal Immission Control Act) → TA Luft review

4. Where can Industry collaborate, participate and influence legislation?

1. Sevilla Process:

- Information exchange process, providing data
- TWG, final meeting
- Art. 13 Forum

2. National Transposition of BVT-conclusions:

- Until 2014: Industry was member of TA Luft committee
- Since early 2014: *General sectoral administrative regulations by the Federal Environment Minister* (according to § 48 Federal Immission Control Act) or
- Amendments of Ordinances (according to §7 Federal Immission Control Act)

In the two latter bullets particular participation through public consultations with the interested stakeholders (industry and NGO's), and authorities of the Member States.

4. Transposition of **BAT** conclusions into national legislation

29 BREFs developed under IPPC/IED have been passed through the TALA process (→ *executive recommendation*). Needs for amendments in the TA Air were found for 11:

- Ceramic Manufacturing Industry CER (IPPC)
- Surface treatment using organic solvents STS (IPPC)
- Large volume inorganic chemicals LVIC-AAF (IPPC)
- Production of speciality inorganic chemicals SIC (IPPC)
- Manufacture of organic fine chemicals OFC (IPPC)
- Smitheries and foundries Industry SF (IPPC)
- Waste treatments Industries WT (IPPC)
- Tanning of hides and skins TAN (IPPC)
- Manufacture of glass GLS (IED)
- Iron and steel Production IS (IED)
- Production of Cement, lime and magnesium oxide CLM (IED)

until 2014

The following 3 BREFs reviewed under IED were transposed by sectoral administrative regulations and changes in the 13th ordinance:

- Production of Chlor-alkali CAK (IED)
- Pulp and paper industry PP (IED) (*transposed intermediately by an executive recommendation*) and
- Refining of mineral oil and gas Ref (IED) including amendments to the 13th ordinance
http://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_19122017_IGI25012151SB.htm

since early
2014

Directly introduced into the draft of the revised TA Luft 4/2017

- Non-ferrous metals industries NFM (IED)
- Common waste water and waste gas treatment (Chemical sector) CWW (IED)
- Woodbased panels (IED)

4. Transposition of **BAT** conclusions into national legislation

The following BREFs reviewed under IED are being currently transposed by sectoral administrative regulations and in some cases changes in the 13/17th ordinance:

- Large Volume Organic Chemicals (IED)
- Waste Treatment

For the following BREFs reviewed under IED the transposition by sectoral administrative regulations and in some cases changes in the 13/17th ordinance will start soon:

- Food, Drink and Milk
- Waste Incineration

4. TRANSPOSITION OF **BAT** CONCLUSIONS INTO NATIONAL LEGISLATION

Problems with BAT transposition:

- **BAT without AEL**

Art. 14 (3): BAT conclusions shall be the reference for setting the permit conditions; not as clear as Art. 15 (mandatory application of BAT-AEL)

- **BAT-AEL ranges → emissions limit values (ELV)?**

- **Footnotes**

Depending on the way the footnote is phrased this can cause problems.

Example in the Cement, lime and Magnesia BREF:

BAT-associated emission levels for CO from the flue-gas of kiln firing processes BAT-AEL (*) <500 mg/Nm³

(*) Emissions can be higher depending on raw materials used and/or type of lime (hard lime) produced, e.g. hydraulic lime.

- **Reference oxygen content** (shall prevent off-gas-dilution)

4. TRANSPOSITION OF **BAT** CONCLUSIONS INTO NATIONAL LEGISLATION

General approach when transposing BAT conclusions into national regulations:

- **General no setback**
- Usually the upper end of the BAT-AEL range is used for the recommendations or administrative regulations
- Deviations from the upper BAT-AEL value only in well-justified cases
- Selected consideration of BAT without AEL (i.e. requirements to reduce diffuse emissions by collecting and transpose into channeled emissions and subsequent posttreatment, other constructional and operational requirements)
- Monitoring requirements will be transposed one-to-one, according to Art. 16 (1)

4. TRANSPOSITION OF **BAT** CONCLUSIONS INTO NATIONAL LEGISLATION

Example: BREF Iron and steel production /No. 5.4.3.1a Sinterplant

Pollutant	BAT/ Range BAT-AEL [mg/m ³]	Current TA LUFT [mg/m ³]	New requirements [mg/m ³]
Dust (BVT 20)	1 – 15 (Fabric filter) < 20 – 40 (Electrostatic Precipitator)	20 50 for existing plants with Electrostatic Precipitator	10 New plants; existing plants: 10 (from 2020) 40 (from 2016)
Dioxines/Furanes/ PCB (BVT 25)	0,05 – 0,2 ng/m ³ (Fabric filter) <0,2 – 0,4 ng/m ³ (Electrostatic Precipitator)	0,4 ng/m ³ Target value: 0,1 ng/m ³	0,2 ng/m ³ Target value: 0,1 ng/m ³ existing plants: 0,2 (from 2020), until then 0,4 ng/m ³

- ✓ This is an example for an ambitious national transposition
- ✓ Before **unlimited requirements for** existing plants with high values for Electrostatic Precipitators; Now: complete exchange of the abatement technique leads to tremendous reduction of all emissions, e.g. dust and dust bearing pollutants

4. TRANSPOSITION OF **BAT** CONCLUSIONS INTO NATIONAL LEGISLATION

Example: BREF Iron and steel production /No. 5.4.3.1a Sinterplant

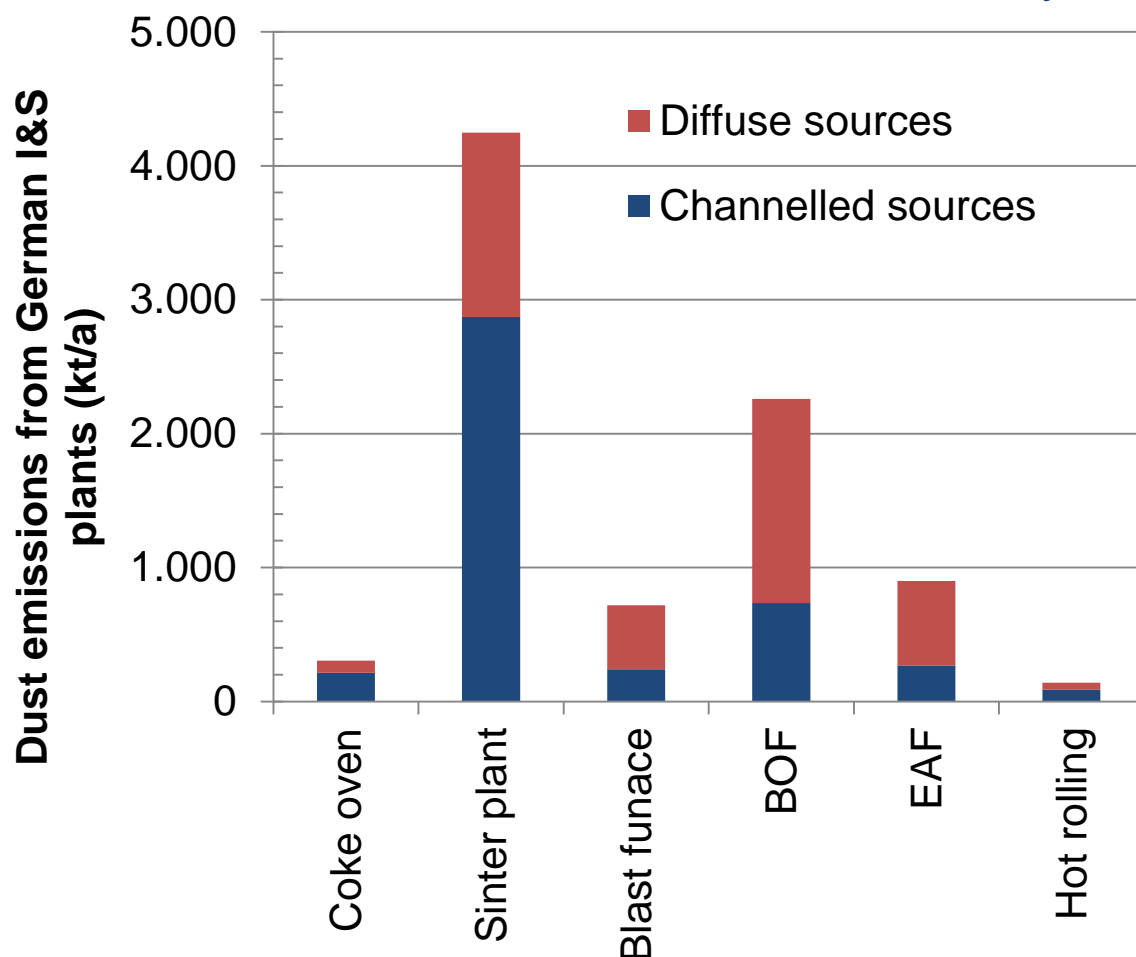
Total emissions of dust and dust containing pollutants after retrofitting of electrostatic precipitators by fabric filters in Germany (2020 the latest)

Pollutant	Emissions [t/a]		
	TA Luft 2002	TA Luft 2017	Realistically estimated emissions with fabric filter
Dust	2900	580	200
Lead	116	58	20
Cadmium	29	17	<10
Mercury	29	17	<10
Dioxines/Furanes/PCBs	25 g/a	12,5 g/a	<10 g/a

Based on production data according to the Iron nad steel BREF 2012

4. TRANSPOSITION OF **BAT** CONCLUSIONS INTO NATIONAL LEGISLATION

Diffuse dust emissions from the steel industry



- 48% of the total dust emissions originate from diffuse sources
- At blast furnaces, both oxygen and EAF steel plants, diffuse sources contribute to 2/3 of the total dust emissions.
- The biggest amounts of diffuse dust emissions originate from sinter plants, steel plants and blast furnaces.

5. Examples for prospective changes of the TA Luft

...in particular for the Chemical Industry

- **Odour (GIRL: odour exposure guideline)**
- **5.2.5 Organic substances (CLP, new classifications)**
- **5.2.6 Gaseous Emissions during the processing, conveying, transfilling or storage of liquid organic substances**
- **5.2.7.1: Carcinogenic, mutagenic and reproduction toxic substances (CLP, new classifications):**
 - **Quartz and Formaldehyde**
- **Energy**
- **Chemical industries (BVT!) ← Executive Recommendations**
- **Refineries (BVT!) ← Administrative Regulation**

5. Examples for prospective changes of the TA Luft

No. 5.5: Discharge of waste gas

Currently: Determination of the stack height with the Nomogramm (No. 5.5.3) with consideration of:

- ✓ Consideration of buildings, vegetation and shape of the terrain
- ✓ Minimum stack height 10 m and 3 m above the ridge of the roof
- ✓ Consideration of the slope of the roof; use of 20° in cases of a slope of less than 20° , however, max. is twice the height of the building
- ✓ $H_{\max} < 250 \text{ m}$; (200 m)

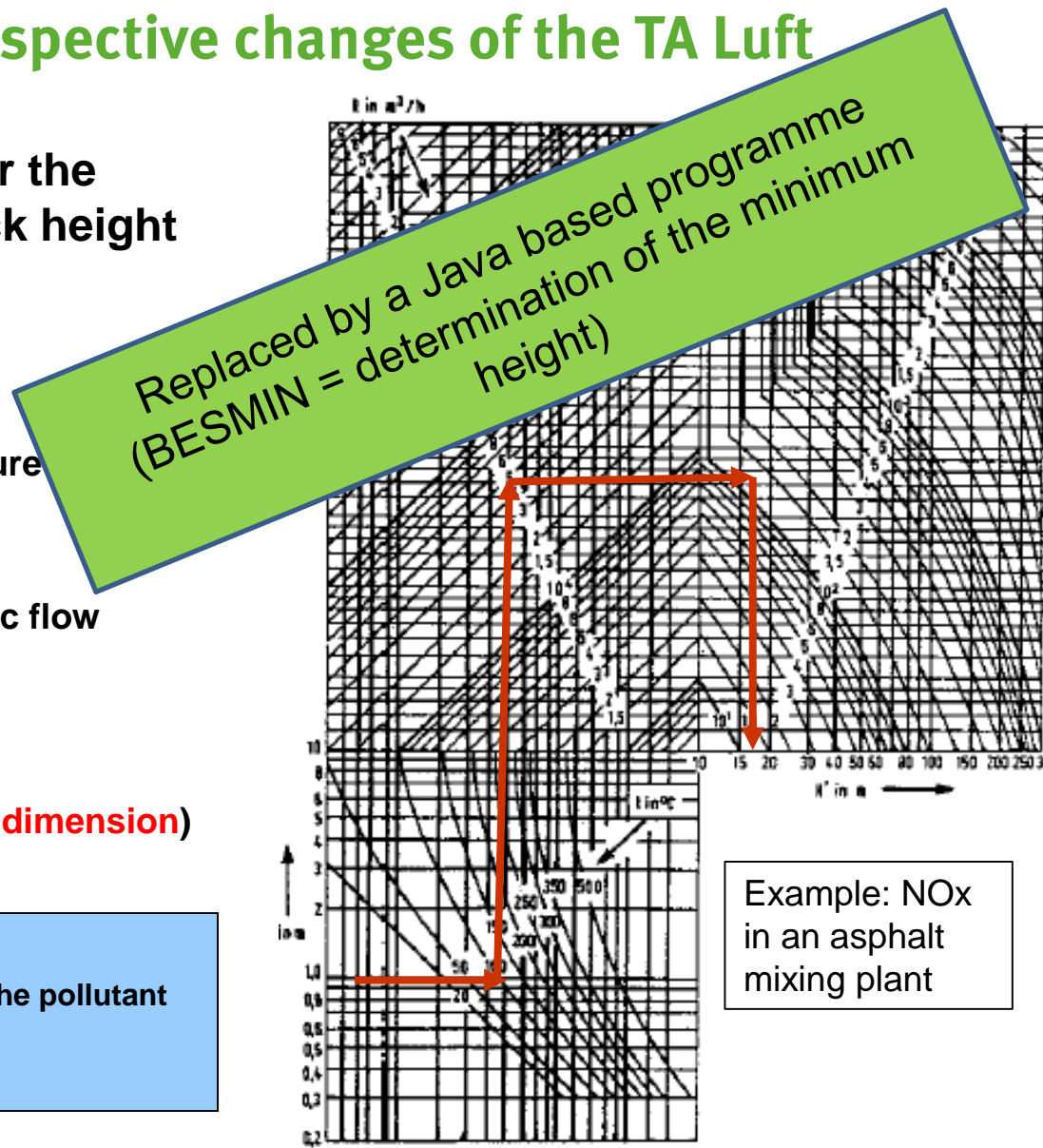


5. Examples for prospective changes of the TA Luft

No. 5.5.3 Nomogramm for the determination of the stack height

H' in m	Stackheight in the Nomogramm;
d in m	Inner diameter
t in °C	waste gas temperature stack exhaust
R in m ³ /h	Waste gas volumetric flow (m ³ _{n.t} /h)
Q in kg/h	Mass flow (also for fibres)
S	Factor (currently no dimension) (Annex 7)

Determining for the stack height is the pollutant with the highest proportion of Q/S



5. Examples for prospective changes of the TA Luft

No. 5.5: Discharge of waste gas

Principles/ undefined legal term

DRAFT TA LUFT 2016

5.5.1 General

(1) Waste gases shall be discharged in such a manner that an undisturbed dispersion is made possible by the free air stream and a sufficient dilution will be achieved. As a rule, a discharge through stacks is required, the height of which shall be determined pursuant to No. 5.5.2, notwithstanding better cognition.

Both principles are mentioned

5.5.2 Discharge through stacks

5.5.2.1 General

(1) The position and the height of the stack exhaust has to comply with the requirements of the Guideline VDI 3781 Blatt 4 (Draft, published December 2015), to ensure an undisturbed dispersion by the free air stream.

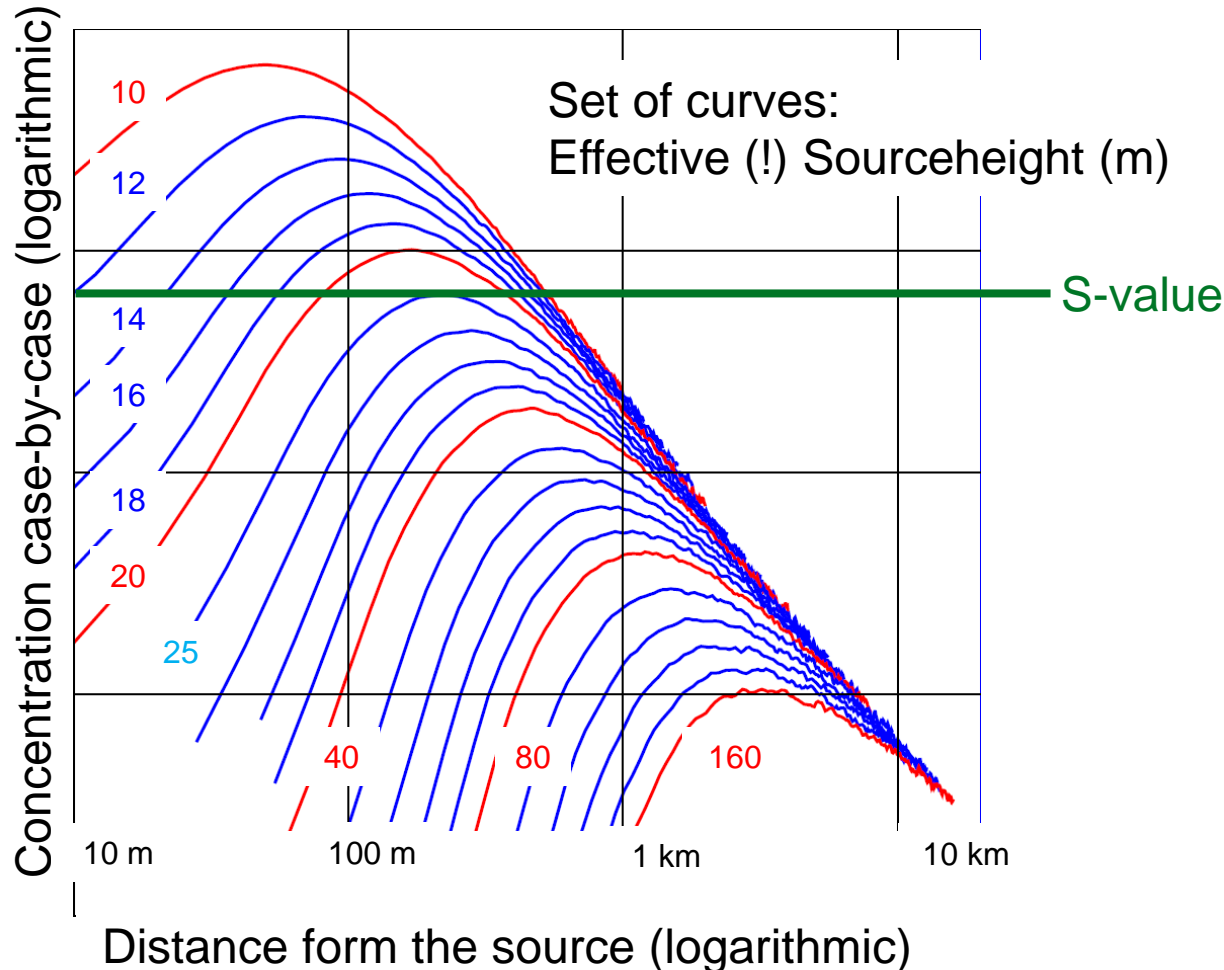
New: Prominent and complete determination of the so far undefined legal term: „undisturbed dispersion = ungestörter Abtransport“.

5. Examples for prospective changes of the TA Luft

No. 5.5: Discharge of waste gas

No. 5.5.1 General: sufficient dilution

No. 5.5.2.2 Determination of the stack height, Annex 2, section 14 (BESMIN)



Boundary layer model LASAT
Roughness length 0,5 m
Dispersion class III/1
Wind velocity 2 m/s

Draft TA Luft 9.9.2016:

calculated set of curves for

- 9 wind velocity classes (1 m/s – 12 m/s)
- 4 dispersion classes (I, II, III/1, III/2)
- 25 possible combinations
- the highest additional load applies

→ Determination of effective source heights, here → 25 m

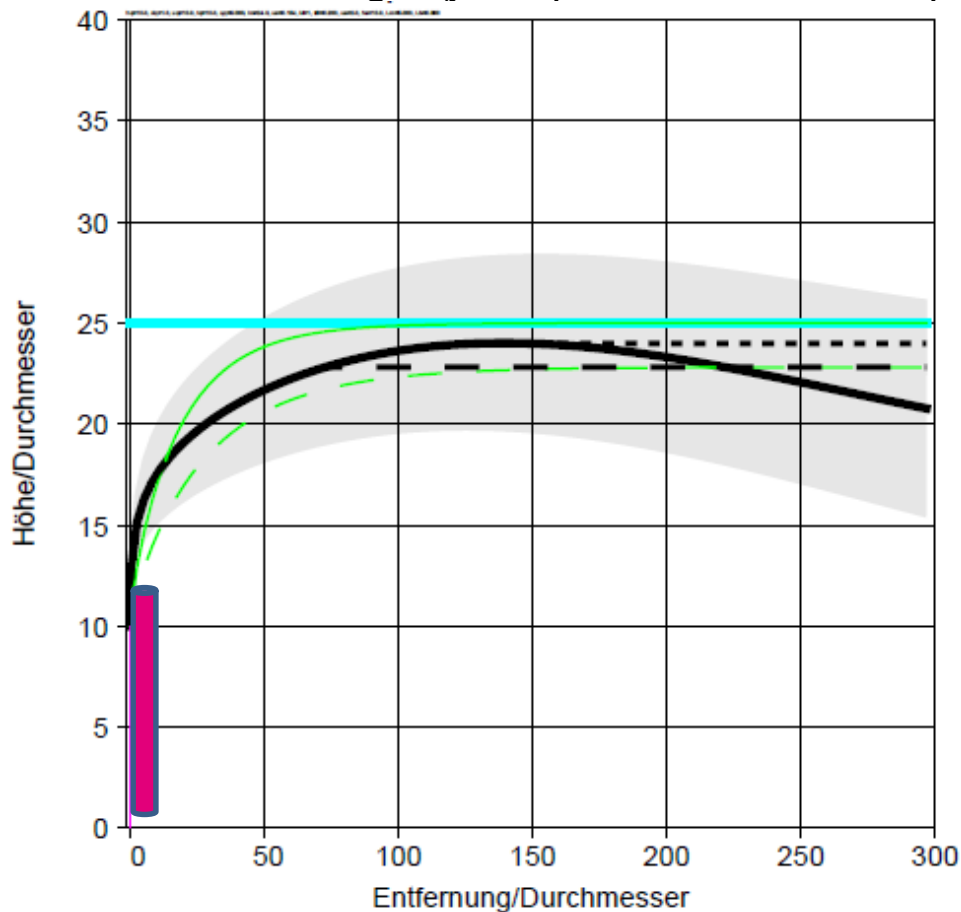
5. Examples for prospective changes of the TA Luft

No. 5.5: Discharge of waste gas

No. 5.5.1 General: Sufficient dilution

No. 5.5.2.2 Determination of the stack height, Annex 2, section 14 (BESMIN)

Effective sourceheight (jet impulse, stabile atmospheric layering)



Effective Sourceheight

Waste gas plume elevation

Stackheight

5. Examples for prospective changes of the TA Luft

No. 5.5: Discharge of waste gas

New: No. 5.5.2.2 : Algorithm replaces Nomograph: Implementation as a Java-Programme (BESMIN=Determination of minimum stack height) (will be provided cost free by UBA)

1 DETERMINATION OF THE EFFECTIVE SOURCEHEIGHT

- Effective sourceheight, to ensure that the S-value (Immission value) is met; **the S value gets back its unit [mg/m³] and is impact related**

2 DETERMINATION OF THE WASTE GAS PLUME ELEVATION

- Inputdata: inner stackdiameter, waste gas velocity, waste gastemperature, waste gas humidity, windvelocity in the related area

3 DETERMINATION OF THE STACK HEIGHT

- Difference between the effective sourceheight and waste gas plume elevation gives the final stack height

Note: Conservation of Status Quo for existing stacks

6. Next steps in the TA Luft review process

- Latest draft 16th July 2018
- ongoing interministerial discussion process
- Cabinet draft → Cabinet decision is aimed mid 2019
- Enter the Federal Council process in September /October 2019
- Goal: New TA Luft by Spring 2020



**Thank you for your
attention.**

Rainer Remus

rainer.remus@uba.de

Umweltbundesamt
Wörlitzer Platz 1
06844 Dessau-Roßlau
Tel.: +49 340 2103 2068

www.uba.de

