Für Mensch & Umwelt

Umwelt Bundesamt

Waste to Energy 2022 – March 28th 2022

Implementation of BATC for Waste Incineration in Germany – Actual status

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Environmental Permitting Regimes for Waste Incineration Plants and Treatment Plants for ash and slag in Germany

- **Federal Immission Control Act (Bundes-Immissionsschutzgesetz, BImSchG)**
  - Ordinance on installations requiring a permit (4. BImSchV)
  - Ordinance on facilities for incineration and co-incinernation of waste (17 th Ordinance Implementing the Federal Immission Control Act – 17. BImSchV)
  - First general administrative regulation (technical instructions on air quality control, TA Luft)
- **Federal Water Act (Wasserhaushaltsgesetz, WHG)**
  - Wastewater ordinance (AbwV)
    - Annex 33: Facilities for incineration of waste
    - Annex 27: Facilities for chemical and physical treatment of waste and waste oil processing (chemical and physical treatment of ash and slag from waste incineration plants

Approach for the Implementation of BATC WI in Germany

- review existing regulations
- provide a synopsis of preliminary proposals for the implementation of BATC WI in the national regulations

Proposals for the amendment to the 17 th Ordinance on incineration and co-incineration of waste

Proposals for administrative regulation for including ash/slag treatment(combining BREF WT and WI)

Proposals for the amendment to the Annex 27 (including ash/slag treatment) and Annex 33 of the wastewater ordinance (AbwV)

Technical Instructions on Air Quality Control (TA Luft)

- **Background information:**
  - Administrative guideline binding on competent authorities in licensing industrial installations (last amendment in 2002)
  - Containing emission standards, requirements to emission reduction and methods to determine emissions
  - Under review since 2014 in accordance with the advanced state of the art (BAT)
  - Constant information exchange between the review team and the scientists of UBA (including those involving in the review process of different BREFs)
  - The new version of TA Luft, which was adopted on June 23, 2021, and published August 18, 2021 came into force December 1, 2021.

- **What BATC WI have been included in the draft version:**
  - General BATC regarding emissions to air

Administrative Regulation for Waste Treatment (including treatment of slags and/or bottom ashes from the incineration of waste – Waste Incineration)

- Key issues paper based on the draft amendment to TA Luft relating to waste treatment
- Specific provisions included for additional facilities in accordance to BATC WT and BATC WI (specifically the treatment of slags and/or bottom ashes from the incineration of waste)
- Expert discussion on 10 September 2018
- Countless discussions for clarification and improvement
- Draft version of this administrative regulation published on 28 January 2020 for public consultation

Administrative Regulation for Waste Treatment (including treatment of ash and slag from waste incineration)

- **Interpretation of BATC with certain ambiguity**
  - BATC treatment of ash and slag from waste incineration
    - Question: type of waste treated? - for example wet ash??
    - Proposal: BATC treatment of ash and slag from waste incineration

  - BAT 24/26. In order to prevent or reduce diffuse dust emissions to air from the treatment of slags and bottom ashes, BAT is to use an appropriate combination of the techniques given below.
    - a) Table of BAT 24: “Enclose and cover equipment. ”
      - Enclose/encapsulate potentially dusty operations (such as grinding, screening) and/or cover conveyors and elevators. Enclosure can also be accomplished by installing all of the equipment in a closed building.
        - Installing the equipment in a closed building may not be applicable to mobile treatment devices
    - Question: Definition of mobile treatment devices?
    - Proposal: Closed buildings are only required for new systems, especially when dealing with dry ashes.

Administrative Regulation for Waste Treatment (including treatment of ash and slag from waste incineration)

General Administrative Regulation on Waste Treatment Plants (ABA-VwV) From 20 January 2022 BATC TREATMENT OF ASH AND SLAG FROM WASTE INCINERATION

- **"INSTALLATIONS FOR THE MECHANICAL TREATMENT OF ASHES AND SLAGS FROM THE INCINERATION OF WASTE"**

1. STRUCTURAL AND OPERATIONAL REQUIREMENTS

When treating wet-discharged incineration ashes, care shall be taken to minimise fugitive dust emissions by optimising the water content of the incineration ashes, taking into account the requirements for efficient treatment for metal recovery and for the production of A mineral fraction. In the case of potentially dust-forming treatment steps, depending on the risk that may emanate from the slags and ashes with regard to their fugitive emissions into the air, crushers, crushing and screening equipment and belt transfers shall be enclosed or equivalent measures to reduce dust emissions shall be applied.

Administrative Regulation for Waste Treatment (including treatment of ash and slag from waste incineration)

INSTALLATIONS FOR THE MECHANICAL TREATMENT OF ASHES AND SLAGS FROM THE INCINERATION OF WASTE"

1. STRUCTURAL AND OPERATIONAL REQUIREMENTS

The waste gas streams from these facilities shall be collected and fed into a waste gas purification facility. In addition, in the case of heavily dusting ashes, point extraction systems shall be installed on units such as screening drums and water humidification systems shall be installed on feed and discharge conveyors as well as in tipping and loading zones. Discharge heights should be reduced where possible and designed to be variably adjustable. Heavily dusting materials such as dried ash with grain sizes smaller than 5 millimetres shall be stored at least protected from the wind and, if necessary, humidified. Specific requirements for implementing the aforementioned dust reduction specifications can be found in Guideline VDI 3460 Part 1 (February 2014 edition).Translated with www.DeepL.com/Translator (free version)

Administrative Regulation for Waste Treatment (including treatment of ash and slag from waste incineration)

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The requirements for installations of No. 8.12.3 of Annex 1 to the 4th BImSchV shall remain unaffected. Likewise, the requirements pursuant to No. 5.2.3 of the Technical Instructions on Air Quality Control of 18 August 2021 for dust emissions during the handling, storage or processing of solid substances shall remain unaffected.

Administrative Regulation for Waste Treatment (including treatment of ash and slag from waste incineration)

INSTALLATIONS FOR THE MECHANICAL TREATMENT OF ASHES AND SLAGS FROM THE INCINERATION OF WASTE"

1. STRUCTURAL AND OPERATIONAL REQUIREMENTS

In addition to the requirements under para. 1, incineration ashes that are already discharged dry in the state of accumulation (dry discharge without wet deslagger) or already have such a low residual water content upon delivery that they tend to generate a lot of dust may only be treated in closed units or buildings in order to protect against drifting and increased dust emissions. In particular, these waste gas streams shall be collected at the point of origin, e.g. directly at the aggregates such as crushing or screening equipment, or when discharged from the building, and fed into a suitable waste gas purification facility, e.g. a fabric filter.

Administrative Regulation for Waste Treatment (including treatment of ash and slag from waste incineration)

INSTALLATIONS FOR THE MECHANICAL TREATMENT OF ASHES AND SLAGS FROM THE INCINERATION OF WASTE

TOTAL DUST

The separately collected waste gas streams from the treatment of ashes and slags from waste incineration shall be fed into a suitable waste gas purification facility. Dust emissions in the cleaned waste gas shall not exceed a mass concentration of 5 mg/m3.

MEASUREMENT AND MONITORING

For installations marked with the letter E pursuant to column d of the table of Annex 1 to the 4th BImSchV and in which dry incineration ashes are treated, 5.3.2 of the Technical Instructions on Air Quality Control of 18 August 2021 shall apply with the proviso that recurring measurements of the concentration of total dust shall be required annually.

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Amendment of annexes 27 and 33 to Wastewater Ordinance

- **Background information:**
  - Laying down requirements for wastewater management and emission limit values for direct and indirect discharge

- **Amendment process**
  - Setting up two working groups consisting of representatives from BMU, UBA and competent authorities of several federal states
  - First group meeting for annex 27 in September 2018
  - First group meeting for annex 33 in April 2020 (following meetings mostly virtual)
  - Significant amendments to both annexes
    - extension of the scope of annex 27 in accordance to BATC WT/WI
      Annex 27 changed to “Facilities for mechanical, chemical and/or physical treatment of waste”
    - emission limit values adjusted in accordance to BATC WT/WI (treatment of ash and slag)
    - WT BAT 3 and BAT 7 (monitoring requirements) added to a new section “operator obligations”
    - Potential difficulties in the implementation
    - WT BAT 20: significantly low BAT AELs for heavy metals, no differentiation between polluted rainwater and production-specific polluted effluents

Amendment of annexes 27 and 33 to Wastewater Ordinance

➢ Background information

- Laying down requirements for wastewater management and emission limit values for direct and indirect discharge

➢ Amendment process ANNEX 33

- New version of Annex 33 “Washing of exhaust gases from the incineration of waste” covers only the incineration of waste (Co-incineration based on BATC LCP – now Annex 47)
- Draft versions of amendment ready since spring 2021

➢ Amendment process WASTEWATER ORDINANCE

- The draft version for the 12th amendment of the Wastewater Ordinance, which includes annexes 23, 27 and 33, is ready for discussion and the implementation.
- The Federal Environment Agency has sent out the estimate of the follow-up costs that may result from the changes to the Ministry for Environment in December 2021.

Draft version – 17th German Federal Pollution Control Ordinance (17. BImSchV)- Incineration and Co-Incineration of waste.

- **Background information:**
  - First revision of 17. BImSchV published in July 14th 2021 mostly to fulfil the requirement of BREF LCP – Co-Incineration of waste in large combustion plants
  - Small chances for waste incineration plants
- **Amendment process**
  - First revised draft version for implementing BREF WI were discussed officially between representatives from BMU and UBA in September 2021.
  - End of November 2021 an Ad-hoc-working group with representatives from BMU and UBA and competent authorities of several federal states dealing with special items like the measurement of POP or brominated dioxin and furans was established
  - First official draft version for the amendment of 17th Ordinance expected June 2022

Amendment to the 17th Ordinance Implementing the Federal Immission Control Act (Ordinance on incineration and co-incineration of waste)

- **Provisions for the incineration of waste (Waste Incineration Plants - WI)**
  - some of the BAT for WI have been already applied in Germany but there is still a political discussion on parameters like Mercury and NOx including Ammonia slip
  - National discussion about yearly average values not directly driven by BREF

- **Minor amendments mainly in accordance to BATC WI**
  - Establishment of stricter emission limit values for HCl, SO2 and NOx taking into account the upper value of the BATC range
  - Establishment of stricter emission limit values for Mercury (Hg 0,005 mg/m^3 as yearly average) and NOx (NOx 100 mg/m3 as yearly average) on national basis without any exemptions

Draft version – 17th German Federal Pollution Control Ordinance (17. BImSchV)- Incineration and Co-Incineration of waste.

- **Background information:**

- **First discussed draft version for the amendment of 17th Ordinance**

- **Daily average (New plants)**

  - a) Total dust — 5 mg/m^3
  - b) organic substances,
    - expressed as total carbon, — 10 mg/m^3,
  - c) gaseous inorganic chlorine compounds,
    - to be indicated as hydrogen chloride, — 6 (10 old) mg/m^3
  - d) gaseous inorganic fluorine compounds,
    - expressed as hydrogen fluoride, — 0.9 (1 old) mg/m^3

Draft version – 17th German Federal Pollution Control Ordinance (17. BImSchV)- Incineration and Co-Incineration of waste.

- **Background information:**

- **First discussed draft version for the amendment of 17th Ordinance**
- **Daily average (New plants)**

  - e) Sulfur dioxide and sulfur trioxide,
    - expressed as sulfur dioxide, 30 (50 old)mg/m3,
  - f) Nitrogen monoxide and nitrogen dioxide,
    - expressed as nitrogen dioxide, 120 (150 old) mg/m3,
  - g) Mercury and its compounds,
    - expressed as mercury, 0.01 (0.03 old) mg/m3,
  - h) Carbon monoxide 50 mg/m3,
  - i) ammonia, 10 mg/m3

Draft version – 17th German Federal Pollution Control Ordinance (17. BImSchV)- Incineration and Co-Incineration of waste.

- **Background information:**

- **First discussed draft version for the amendment of 17th Ordinance**
- Measurement obligations for the emission parameter nitrous oxide (N2O - laughing gas) for fluidised bed incineration plants burning sewage sludge and incineration plants using urea for the non-catalytic reduction of nitrogen oxides
- One-off measurement obligations for polybrominated dioxins and furans at all incineration plants and recurring measurements for incineration plants that specifically incinerate waste with brominated flame retardants or add bromine compounds directly to the incineration for the oxidation of mercury. If possible, these measurements should be carried out together with the measurements of polychlorinated dibenzodioxins and dibenzofurans.
- Mitigation strategies for emissions of polychlorinated dibenzodioxins and dibenzofurans during start-up and shutdown of the incinerators (increased emissions are expected primarily during heat-up of the incinerators).

Administrative Regulation for Waste Incineration (excluding treatment of ash and slag of Waste Incineration Plants)

- **Interpretation of BATC with certain ambiguity**

  - Footnote 7 to BAT 4: „The monitoring does not apply if the emission levels are proven to be sufficiently stable..”
    - Question: how to prove if the emission levels are sufficiently stable?
    - Proposal: statistical analysis of measurement data from previous four years according to the VDI Directive 2448 Part 2 (Statistical Evaluation of Random-sample Measurements of Stationary Source Emissions: Determination of the Upper Confidence Limit)(Version July 1997) -> if the upper confidence limit of the 90-percentile at a confidence level of 50 % calculated according to the VDI Directive 2448 Part 2 does not exceed the emission limit value

Thank you for your attention!

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