

ISWA'15

WORLD CONGRESS
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Hazardous waste break out session

Research for revision BREF WI

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Introduction

- IPPC + WID -> IED (2010/75/EU)
- IPPC BREF: exchange of information
 - Waste Treatment BREF (08.2006)
 - **Waste Incineration BREF (08.2006)**
- IED BREF revision: BAT conclusions reference for permit conditions
 - Waste Treatment BREF revision (11.2013-X.2016)
 - Waste Incineration BREF revision (01.2015-05.2018)
- Scope Waste Incineration BREF:
 - Non hazardous waste (NHW) incineration
 - **Hazardous waste (HW) incineration (HWI)**
 - Co-incineration if not covered by other BREFs
 - Gasification & pyrolysis techniques

Role of hazardous waste incineration

Social benefit:

- Move-up from 'perceived' bottom of waste hierarchy to front role in circular economy

Technical perspective:

- **Priority 1:** efficient **destruction** of organic components which display hazardous properties (as defined by LoW), with minimal emissions to air and water and optimal residue composition
- **Priority 2:** transfer of inorganic components which display hazardous properties (as defined by LoW) to specific residues, which after irreversible transformation are safely disposed (= **safe SINK**)
- **Priority 3:** **recovery of materials and energy** to a significant extent , but respecting priority 1 and 2

Major observations in last 10 years

- Limited employment of new techniques
- Scientific evidence of low environmental impact
- Increased use of continuous monitoring of emissions
- Reclassification of HW/NHW volume streams
- Mixing of hazardous waste without clear regulation
- HW thermally treated in other than high temperature incinerators
- Opportunistic use of gasification, pyrolysis,... terminology



Key issues for the BREF revision

Regulation gaps & BREF solutions

- HW management -> diluted in Waste Framework Directive
 - BREF to focus on BAT for HW management incl pretreatment & mixing
- HW incineration regulation -> diluted in the current IED
 - BREF to re-emphasize specificity of HWI: back to basics of High Temperature Incineration (HTI) and flexibility of 3 T's concept
- WID/IPPC -> IED: main focus on emissions and less on cross-media effects
 - BREF to safeguard cross-media assessment: lowest emission is not necessarily best environmental performance
- IED = incomplete regarding IPPC aspects
 - BREF to define BAT for burn-out & destruction efficiency: conformity with IED is no guarantee for compliance with BAT HWI

Research KU-Leuven, 1

RESEARCH IN VIEW OF THE REVISION
OF THE BREF ON WASTE
INCINERATION

FINAL REPORT

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Prof. Dr. Carlo Vandecasteele
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- General question:
 - Need for lowering IED ELVs for HWI?
- Content:
 - Monitoring
 - Abatement techniques
 - Impact
- Methods:
 - Literature review
 - Eurits data evaluation
 - Life Cycle calculations



Research KU-Leuven, 2

- State-of-the art HWI results in 'low' overall contribution & health risk
- In general no global ecological benefit from lowering ELVs:
 - Proven for SO₂ and NO_x/N₂O by Life Cycle calculations
 - Local impact assessment remains however valid
- Emissions of Particulate Matter (PM) are under control with correct FGC techniques
- Emissions of Hg (Hg_p, Hg⁰ & Hg²⁺) are under control with high performance hybrid FGC techniques
- CO (= process parameter): to be evaluated more pragmatically in function of monitoring/control of emissions of PIC's



Study uploaded on BATIS

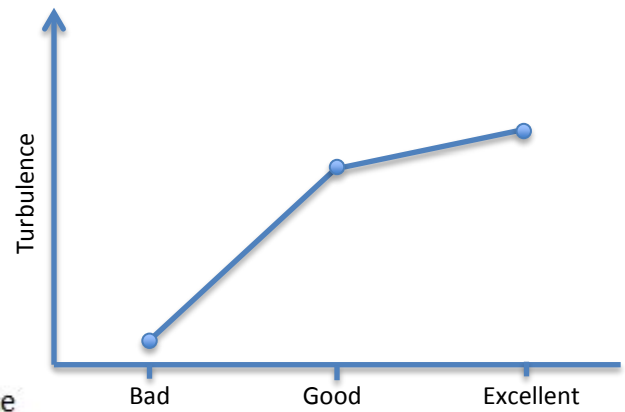
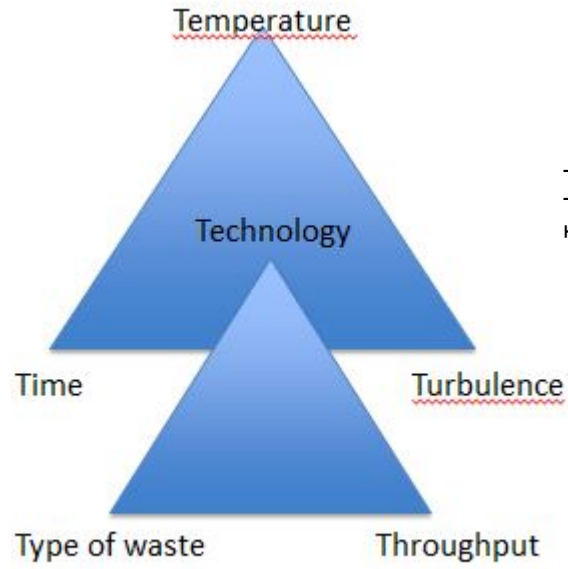
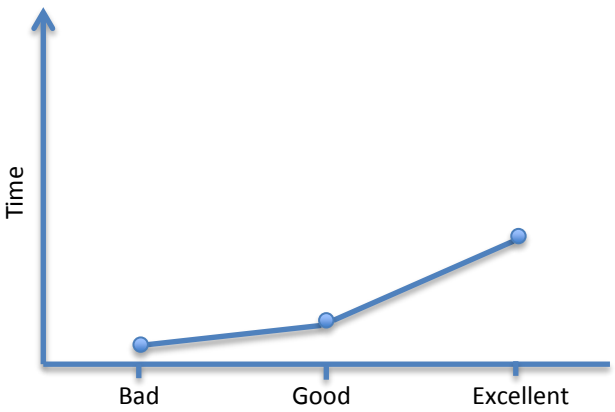
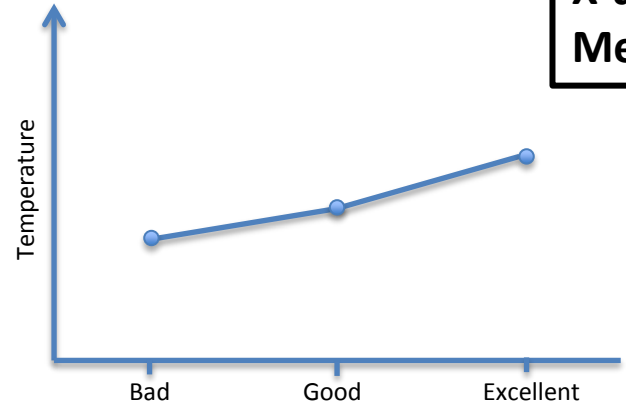
Research Indaver, 1

- *“Hazardous waste is usually treated in the most appropriate way in incinerators specifically dedicated to the treatment of hazardous waste”* ,
Reference: WFD guidance on R1
- High temperature incinerators (HTI) based on ‘Rotary Kiln + Post Combustion chamber’- concept = BAT for HWI:
 - long-term proven operational performance:
 - guaranteed high level of ‘destruction efficiency’ for gas and solid phase
 - operational flexibility:
 - waste input (chemical & physical characteristics)
 - incineration process control (3 T’s, see next slide)
 - flue gas cleaning performance (flexible in function of input)
 - same operational conditions apply as well for gas as solid phase

Other techniques based on a different concept used for HWI must guarantee the same level of performance.

Research Indaver, 2

X-axis: Burn-out quality
Method: TOC + visual criteria



Next steps

BREF review milestones	Tentative deadline
EIPPCB drafts the mandate for the subgroups	February 2015
EIPPCB provides a preliminary draft questionnaire template	May 2015
Submission of additional information (BAT template)	31 August 2015
TWG members submit to the EIPPCB a list of well-performing installations/plants participating in the data collection	30 September 2015*
Release of questionnaire for the data collection	November 2015
Deadline for collection of data via main questionnaire	February 2016
First draft of the revised WI BREF	December 2016
Commenting period on the first draft	March 2017
Final TWG meeting	December 2017
Final draft delivered to the IED Article 13 Forum	May 2018
* At the WI BREF review kick-off meeting May 2015 was agreed on. However, due to the pending decision on how to properly address pyrolysis, gasification and plasma plants and on gaseous waste plants, the EIPPCB has proposed to postpone this deadline.	