Case Study:

Solid Recovered Fuels – Where to Draw the Line Between Standardisation and Legislation?

CEN Technical Committee 343 on Solid Recovered Fuels

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Institute for Environmental Strategies

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Who is ECOS?

- ECOS: European Environmental Citizens' Organisation for Standardisation;
- Non-profit association, established in 2002
- Located in Brussels
- Funded by the EC, EFTA, MS, Foundations
- Status of an associate member of CEN
- Members: 21 environmental NGOs (e.g. Friends of the Earth, WWF, EEB), working on European and/or national level
- More information: http://www.ecostandard.org

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Strategy on Waste

- Promote **prevention principle** (waste hierarchy)
  => Prevention at source: waste minimisation
- Promote **reduction of pollutants** in waste
  => Ban heavy metals in products
  => Separate heavy metals from wastes
- Promote high level of **resource management**
  => Closing the loop: material recycling of waste
- Promote a **safe and sustainable disposal**

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CEN TC 343 Subject: Solid Recovered Fuels = SRF

- Made of waste classified as **non-hazardous waste**
- Origin: **Industrial, commercial, household waste** (also including sewage sludge!)

ECOS conditions for use of waste fuel ("Solid recovered fuels")

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- Local strategy on waste **prevention at source** is established for companies and households
- Local system for **separate collection of hazardous** substances is installed
- Systems for **material recycling** have been assessed and implemented where feasible
- Use of waste as fuel (for co-incineration) is proven to have a **positive energy balance** and to lead to same/**less pollution** than dedicated incineration

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CEN TC 343
Business Plan – Expected Benefits

- "Increased recovery and **less final disposal** of combustible wastes
- **Less dependency** on imported fuels (security of supply)
- Increased **public trust** and **acceptance** of SRF
- Common procedures, **free trade** on internal market
- **Measurement** of "**biodegradable content**" in support of Renewable Energies (RES-E) Directive
- Creation of **jobs** in an expanding industry"

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CEN TC 343 Critical issues

- “Increased recovery” => Competing with material recycling => waste hierarchy endangered
- “Less dependency” => New dependency: of waste
- “Increased public trust” => if better for environment
- “Common procedures” => potential, but not sure
- “Free trade”=> only if End-of-waste status obtained
- “Measurement of "biodegradable content""=> good!
- “Creation of jobs”=> sustainable jobs?

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Fate of SRF: Waste Incineration / Co-Incineration

- Air emissions **limited** by **Directive 2000/76/EC ►IED**
- Emissions into residues and products: **not limited**
- SRF promote **co-incineration = less strict air limits**

SRF are used in

- cement industry
- paper industry
- lignite/hard coal power stations
- dedicated waste incinerators

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Additional release of pollutants from co-incineration

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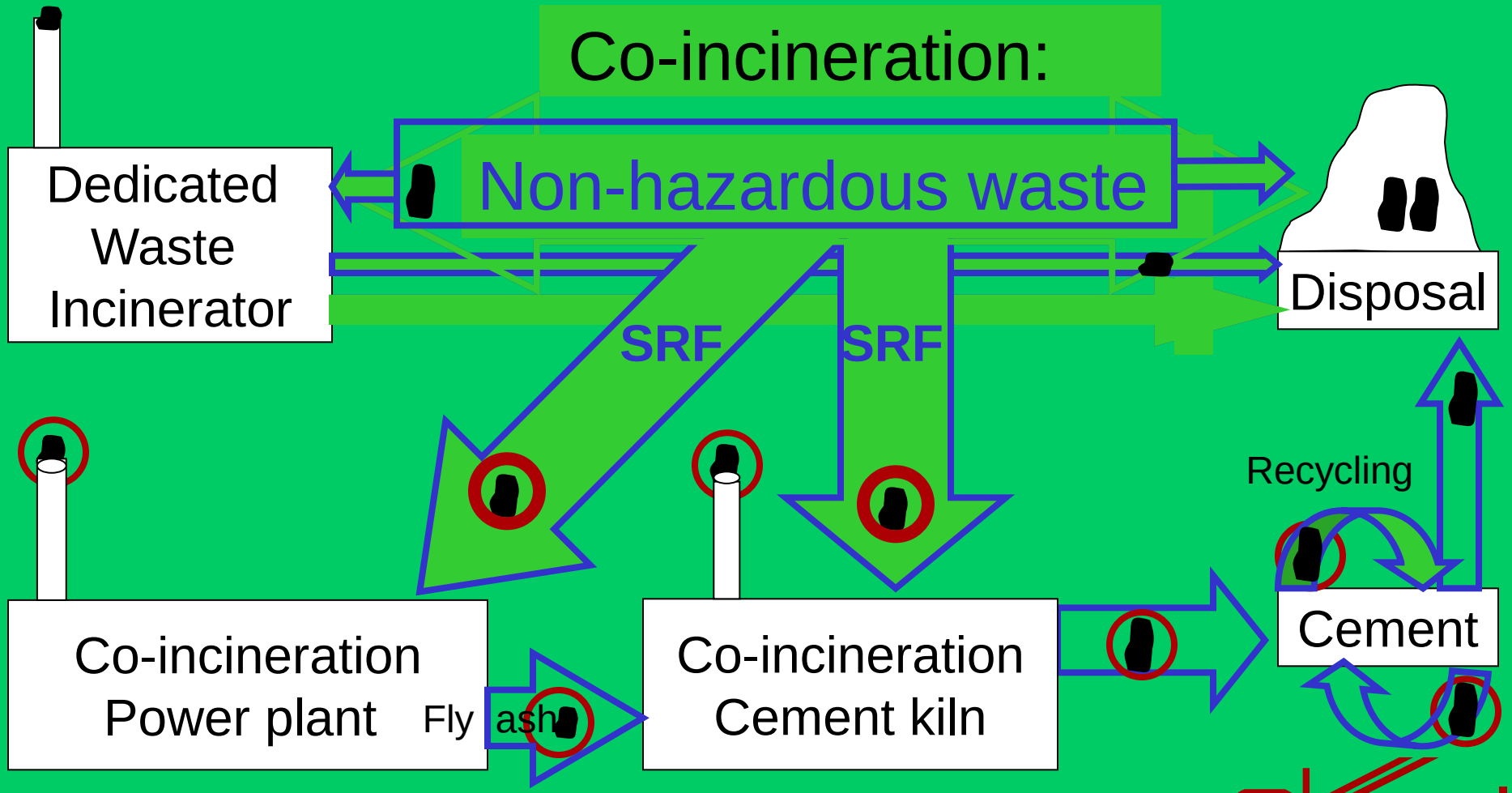

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Additional release of pollutants from co-incineration

Compared with dedicated incineration,
air emissions increase with co-incineration, e.g. from

- **Higher particulate matter emissions**
  - as commonly worse dust abatement
- **Higher heavy metal emissions**
  - from elevated dust emissions
  - from transfer into products/re-use (fly ash, cement)
- **Higher mercury and PCDD/F emissions**
  - as commonly missing activated coke filters

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CEN TC 343 WGs Basis and Analytical Methods

WG 1
Terminology
Quality management

WG 2
Specifications and Classes

WG 3
Methods for Sampling
Preparation of Sample

WG 3
Determination of
Biomass Content

WG 4
Physical Properties
Analysis Methods

WG 5
Chemical properties
Analysis Methods

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CEN TC 343 core standard:

WG 2
Specifications and Classes

- **Good report, published on www.erfo.info ***
- **Report shows:** standardised SRF may not in all cases be appropriate for all (co-)incineration plant
- **However: No cut-off criteria have been defined for other heavy metals than mercury**
- **Mercury "cut off" criterion in far too high and comprised in practice any non-hazardous waste**
- **Prevention principle was not followed**

**www.erfo.info/fileadmin/user_upload/erfo/documents/classification/Classification_report.270205.pdf*

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Outcome: Some SRF hardly burn, high PCDD/F potential

Classification: just 3 parameters (each with 5 classes)

1) Net calorific value: could be as low as 3 MJ/kg

2) Chlorine content: could be up to 3 % (high dioxins formation potential)

3) Mercury content:

Classification property	Statistical measure	Unit	Classes				
			1	2	3	4	5
Net calorific value (NCV)	Mean	MJ/kg (ar)	≥ 25	≥ 20	≥ 15	≥ 10	≥ 3

⇒ High water + chlorine content = "quality fuel"?

Classification property	Statistical measure	Unit	Classes				
			1	2	3	4	5
Chlorine (Cl)	Mean	% (d)	≤ 0,2	≤ 0,6	≤ 1,0	≤ 1,5	≤ 3

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Standardised SRF heavy metal content can be high

3) Mercury: max. 0,5 mg/MJ (median) ,1 mg/MJ (80 percentile)

Classification property	Statistical measure	Unit	Classes				
			1	2	3	4	5
Mercury (Hg)	Median	mg/MJ (ar)	≤ 0,02	≤ 0,03	≤ 0,08	≤ 0,15	≤ 0,50
	80th percentile	mg/MJ (ar)	≤ 0,04	≤ 0,06	≤ 0,16	≤ 0,30	≤ 1,00

⇒ **Hg** (median, 15 MJ/kg) **up to 7,5 mg/kg = "quality fuel"?**

⇒ Heavy metals others than mercury are not limited, e.g. cadmium (will go to air), chromium, nickel, lead, … (will be incorporated in fly ash and cement)

⇒ **Pollutant content is not well restricted**

⇒ **Prevention principle is not applied**

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Mercury emissions from CEN standardised waste

Classification property	Statistical measure	Unit	Classes				
			1	2	3	4	5
Mercury (Hg)	Median	mg/MJ (ar)	≤ 0,02	≤ 0,03	≤ 0,08	≤ 0,15	≤ 0,50
	80th percentile	mg/MJ (ar)	≤ 0,04	≤ 0,06	≤ 0,16	≤ 0,30	≤ 1,00

⇒ Only if Hg class 1: low emissions from any plants

⇒ With all other classes: risk of increased **Hg dissemination** to ambient air

⇒ Hg classes 2 – 4 only to be used for co-incineration if activated coke filters are installed

⇒ Hg class 5: only for dedicated incineration

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ECOS conclusion on standards for waste fuels

- ECOS acknowledges that energy use from biomass content of waste contributes to **climate protection**
- ECOS agrees that **energy content** of waste can be used **efficiently** when used in cement plants or CHP plants, compared to low energy efficiency of many dedicated waste incinerators
- but **pollution level** can increase with co-incineration
- but due to pre-treatment, **overall energy balance** can be negative and lower than for material recycling

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ECOS conclusion on standards for waste fuels

- Preconditions before production of waste fuels:
  - establishment of efficient **waste prevention**
  - comparison of SRF use with **material recycling**
- Pollution prevention needs **restriction** of pollutants
- CEN qualifies waste as “standardised fuel“ even if **low net calorific value** and **high level of pollutants**
  => CEN is worse than national standards (FI, DE, IT)

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ECOS conclusion on standards for waste fuels

- Recital 12 of Directive 2000/76/EC:
  "Council Directive 96/61/EC sets out an **integrated approach to pollution prevention and control** in which all the aspects of an installations environmental performance are considered in an integrated manner."

CEN standards on "Solid recovered fuels" do not follow to the pollution prevention principle.

The standards qualify waste as "fuel" if hardly burning, misleading the public with a positive name for disposal

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ECOS conclusion on standards for waste fuels

- Decision on high cut-off criteria was dominated by industry interest wanting to qualify any waste classified as non-hazardous as Solid Recovered Fuel
- High cut-off criteria for mercury are against the pollution prevention principle => against the mandate*
- Decision on parameters for classification was not based on scientific knowledge. Leaving out Cadmium and Thallium does not fit to Directive 2000/76/EC emission limits => this is against the mandate*

* DG TREN+DG ENV Mandate M/325 of 26.8.2002

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Thank you for you attention

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