



#zerowaste

# WASTE and FIRE : what's the problem?

A live talk with Zero Waste Europe about Ukrainian realities

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# What technologies of waste incineration exist?

- Incineration
- Pyrolysis
- Gasification



# The impacts of waste incineration

## Burning waste impacts:

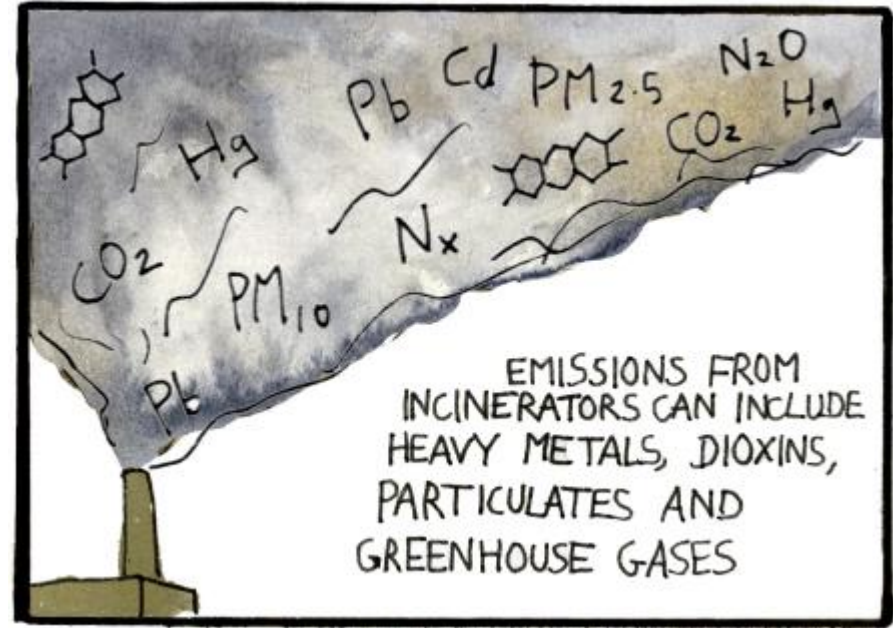
- Health & safety
- Circular economy
- Climate



# Are Modern incinerators safe?

## Toxic emissions:

- Long-term measurements:  
(dioxins and furans):
  - Only 12 hrs out of 365 days (0,1 % production time)
  - Only analyses of dioxins (PCDD) and furans (PCDF)
  - Only measurements under stable combustion conditions
  - And only pre-announced visits



Artistic impression of incinerator emissions, many of which are invisible to the human eye (Credit: F. Howe 2016)

Lo

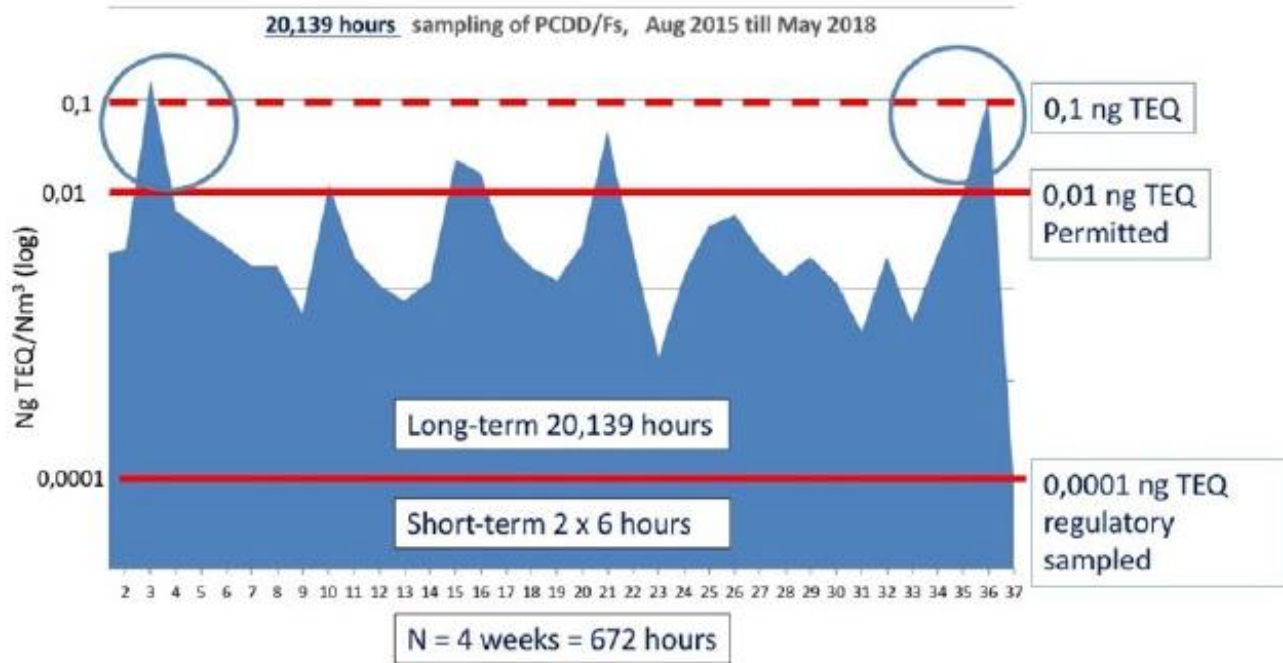






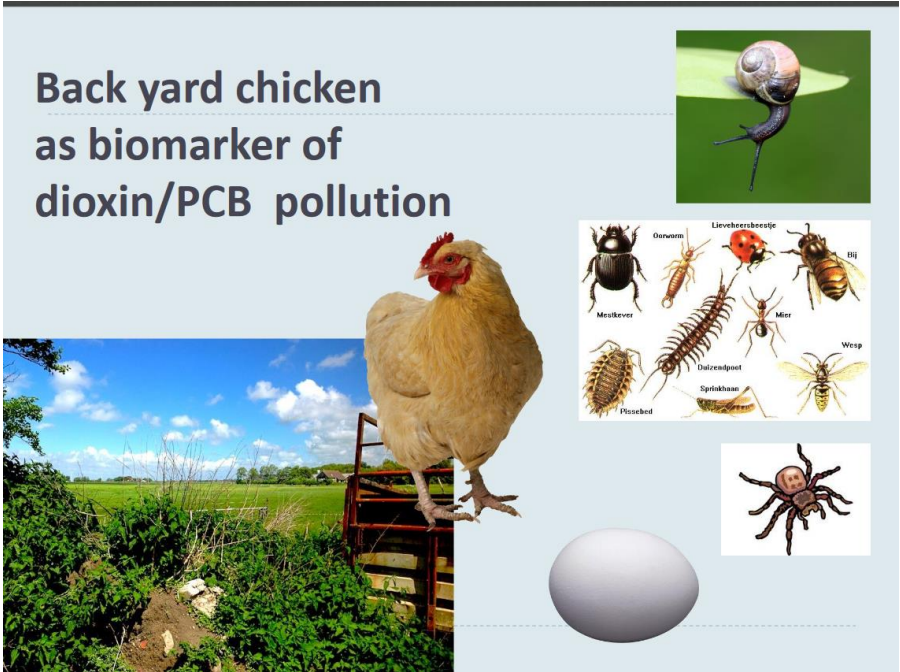
Figure 3: Results of 20,139 hours AMESA long-term sampling PCDD/Fs, REC Harlingen

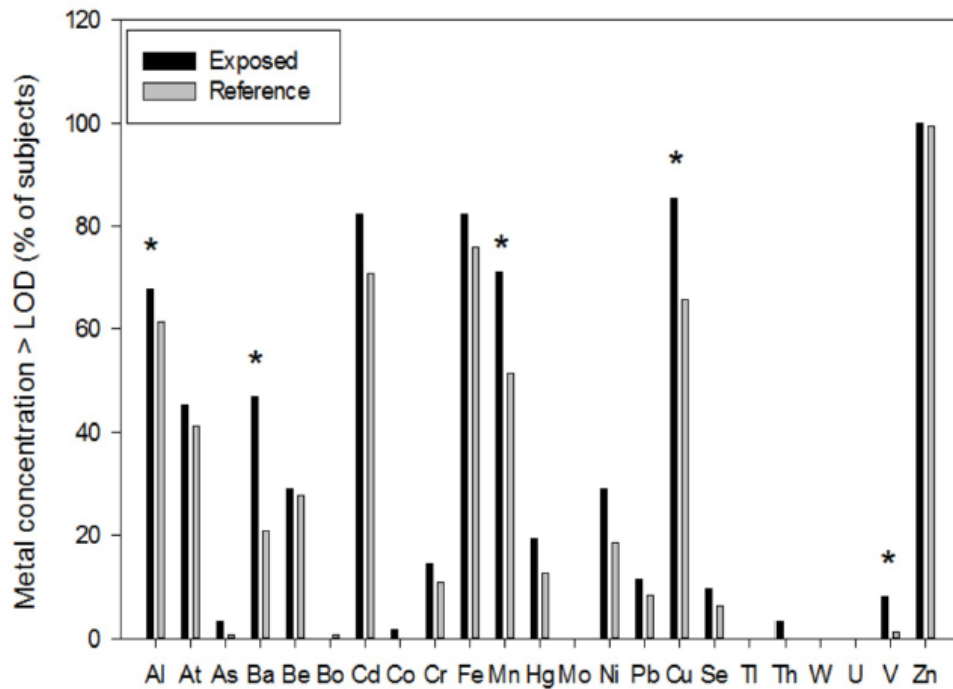
# Are Modern incinerators safe?

## Toxic emissions:

- Bio-monitoring  
(soil, feed, milk and eggs)

Back yard chicken  
as biomarker of  
dioxin/PCB pollution





**Figure 2.** Proportion of children with metal concentration in toenails above the limit of detection (LOD). Children living within a 3 km radius from the two incinerators were considered exposed (n = 62). Children in the reference area (n = 158) were those living in the remaining city areas. Asterisks indicate  $p < 0.01$  (chi-squared test).

# Are Modern incinerators safe?

## Incinerators generate:

- Toxic ash and residues  
(approximately 30% of waste input)

## TOXIC ASH POISONS OUR FOOD CHAIN



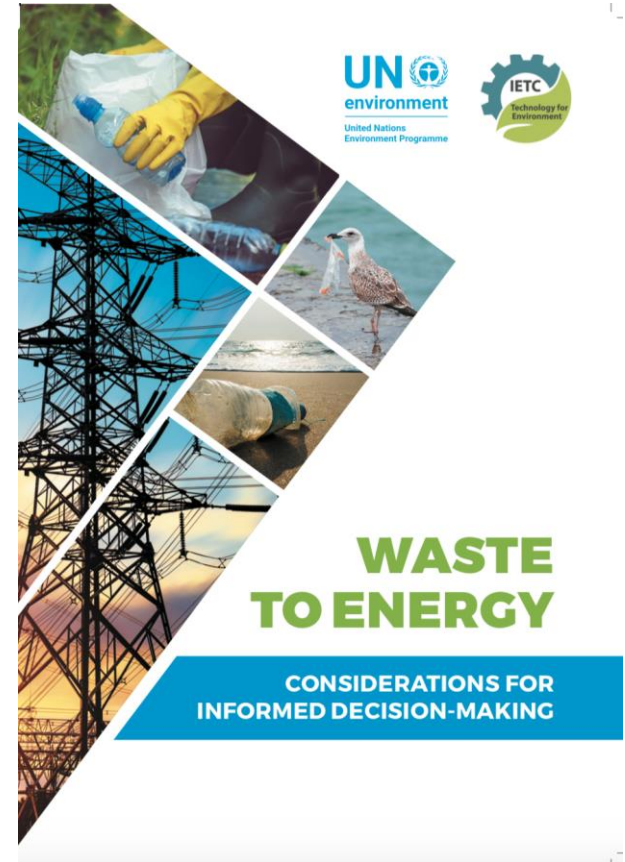
Jindrich Petrlik  
and Lee Bell,  
IPEN



# Are Modern incinerators safe?

## Incinerators generate:

- CO<sub>2</sub> emissions  
(higher than burning fossil fuels)





# Waste-to-Energy is incompatible with climate mitigation: the EU takes a stand



<https://zerowasteurope.eu/2019/09/waste-to-energy-is-not-sustainable/>

[https://zerowasteurope.eu/wp-content/uploads/edd/2019/09/ZWE\\_Policy-briefing\\_The-impact-of-Waste-to-Energy-incineration-on-Climate.pdf](https://zerowasteurope.eu/wp-content/uploads/edd/2019/09/ZWE_Policy-briefing_The-impact-of-Waste-to-Energy-incineration-on-Climate.pdf)

# What about incinerators in Vienna and Copenhagen?

## Few facts:

- too expansive,
- over-sized
- bad for climate



# Regeringen vil have CO2-regningen for affald ned

Plastikaffald skal ud af forbrændingsanlæggene, og danskerne skal sortere affald i langt højere grad. Regeringen foreslår en stribe initiativer, som skal nedbringe klimaaftrykket fra vores affald.

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We incinerate too much waste and we recycle and recycle too little. Plastic from e.g. meat trays, shampoo bottles and clothes end up in the wild or are burnt by and emit CO<sub>2</sub>, so recycling plastic is an important part of solving the climate crisis. That is why we now ask the Danes to sort more waste and make a green difference at the trash. This is a big task and it requires that, at the same time as the climate waste plan, we ensure that it is actually useless to sort, says Environment Minister Lea Wermelin.

<https://mfvm.dk/nyheder/nyhed/nyhed/regeringen-vil-have-co2-regningen-for-affald-ned/>

# Is safe incineration possible?

## Incineration is a bad idea:

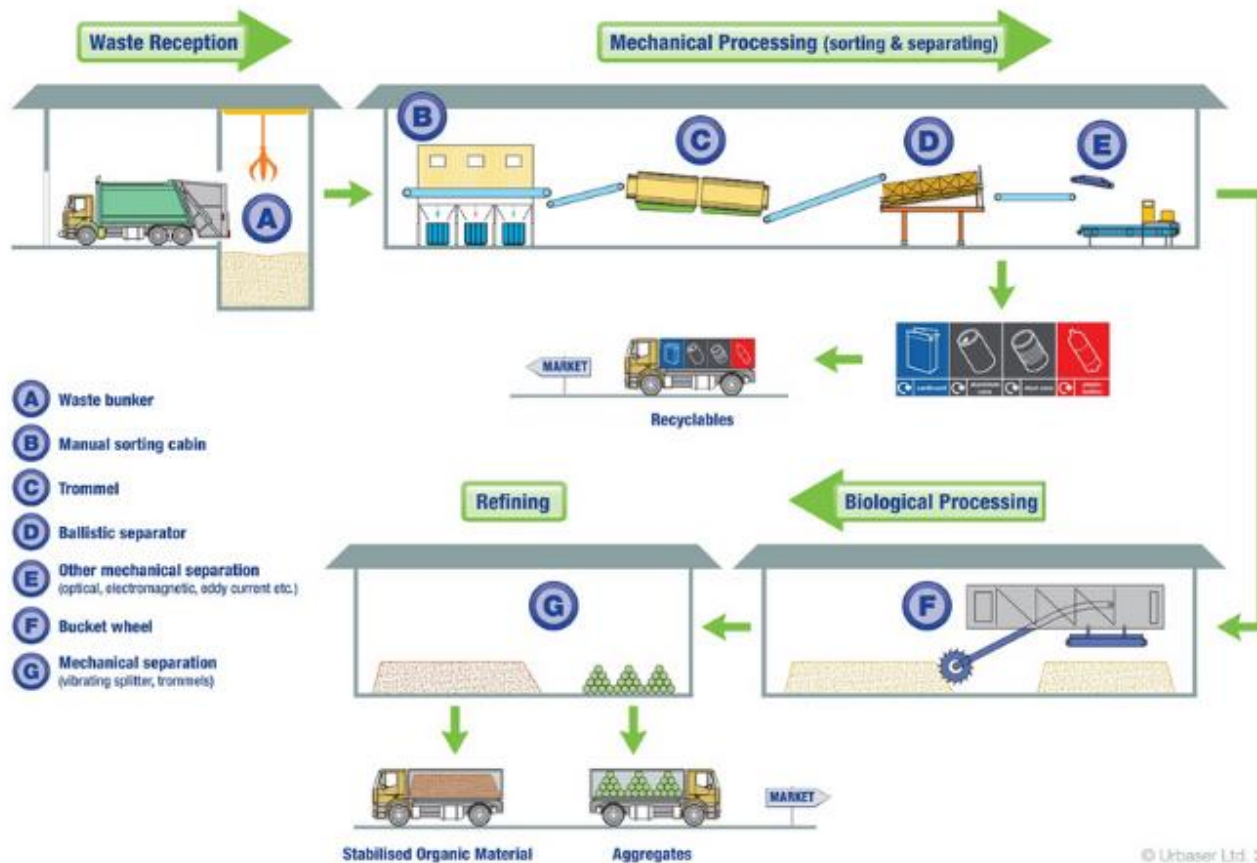
- destroys resources
- generates toxic metals that cannot be destroyed (end up in ashes or air)
- produces new toxins (hard to control)

# What's the alternative to incineration?

## Material Recovery and Biological Treatment :

- Upgraded MBT sites allow:
  - **Recovering further materials from residual waste (~25)**
  - **Minimising negative impact of landfilling**
  - **Maintaining the flexibility of waste system**





# Best practices

The Zero Waste Cities approach is a continuous effort to phase out waste – not by burning or landfilling it – but instead by creating and implementing systems that do not generate waste in the first place

## Discover

What is a Zero Waste City?

DEFINITION

ZW HIERARCHY

WHO WE ARE?

NATIONAL COORDINATORS

## Learn

Strategies for Zero Waste Cities

BEST PRACTICES

COMMITMENT

THE MAP

THE MASTERPLAN

## Take Action

Dig deeper

ZERO WASTE LIVE!

ACADEMY

WORKSHOPS

THE STUDY TOURS

CONFERENCES

<https://zerowastecities.eu/>





## The story of Pontevedra

SPAIN

Thanks to decentralised composting the province of Pontevedra established itself as a best practice example for bio-waste management in Spain and beyond.

START

**0 tonnes**

Composted bio-waste



NOW

**2,052 tonnes**

Composted bio-waste



## The story of Sălacea

ROMANIA

The small municipality of Sălacea in Romania tells a remarkable Zero Waste success story, establishing itself as a best practice that can be replicated in rural communities across Romania.

START

**1%**

Waste recycling rate



NOW

**40%**

Waste recycling rate

# #5

In the last 14 years, Ljubljana has seen a tenfold increase in separate collection, reducing the amount of waste sent for disposal by 95% while keeping the costs among the lowest in Europe. How did Ljubljana manage to be EU best performing capital?



# COVID-19 & incineration

## Do we need incineration:

- No
- In fact, WHO and UNEP recommend other ways to disinfect waste

<https://noharm-global.org/documents/health-care-waste-management-corona-virus-update>

## Steam versus incineration and waste to energy

Both the World Health Organization and the United Nations Environment Program (UNEP) have endorsed steam-based or other non-incineration methods of disinfection over incineration because of the persistent organic pollutants (POPs) produced by incineration<sup>3</sup>.

Incineration is also a great deal more expensive than steam-based<sup>4</sup> technologies and also has a higher carbon footprint. Trapping energy from waste burning is the most polluting and expensive form of energy generation<sup>5</sup>.



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# Thank you!

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