

ESWET compilation of studies and findings in response to claims regarding pollution from WtE

Limitations of studies against WtE

Recent studies by anti-incineration groups have attempted to associate environmental contamination (especially dioxins and PFAS) with WtE facilities through biomonitoring methods (e.g. moss, pine needles, and backyard eggs). However, these studies are flawed for several reasons:

- **No direct correlation** has been found between dioxins measured in the environment and WtE stack emissions (CEWEP/ESWET report: [Dioxins and WtE plants – State of the Art](#) and no direct contact with sampling sources such as chicken coops).
- Reports often **admit inconclusiveness** (e.g. “more data needed,” “no direct link”) while using shock titles like “Toxic Fallout” that mislead the public.
- Biomonitoring studies often fail to isolate WtE emissions from other industrial and environmental factors, or in other words, they **fail to control for other pollution sources** such as traffic, industry, or domestic burning (e.g., [Czech eggshell contamination study](#) showed no fingerprint match with incinerators).
- **Congener analysis** (i.e. chemical fingerprinting) reveals that pollution found in biological samples does **not match WtE emissions**, disproving direct attribution.
- **EU regulation is strict:** Modern WtE plants use advanced abatement and monitoring technologies to maintain emissions far below legal thresholds — even with enhanced testing (see UK DEFRA study on Persistent Organic Pollutants).
- **Independent experts and the European Commission** have confirmed that WtE is safe and essential to the circular economy (see ESWET’s 2022 webinar “Pollution and WtE: Myth or Reality”).
- Detailed [evidence review by the UK Health Security Agency](#) updated as of **9 June 2025** concludes that **"modern, well run and regulated municipal waste incinerators are not a significant risk to public health"**.

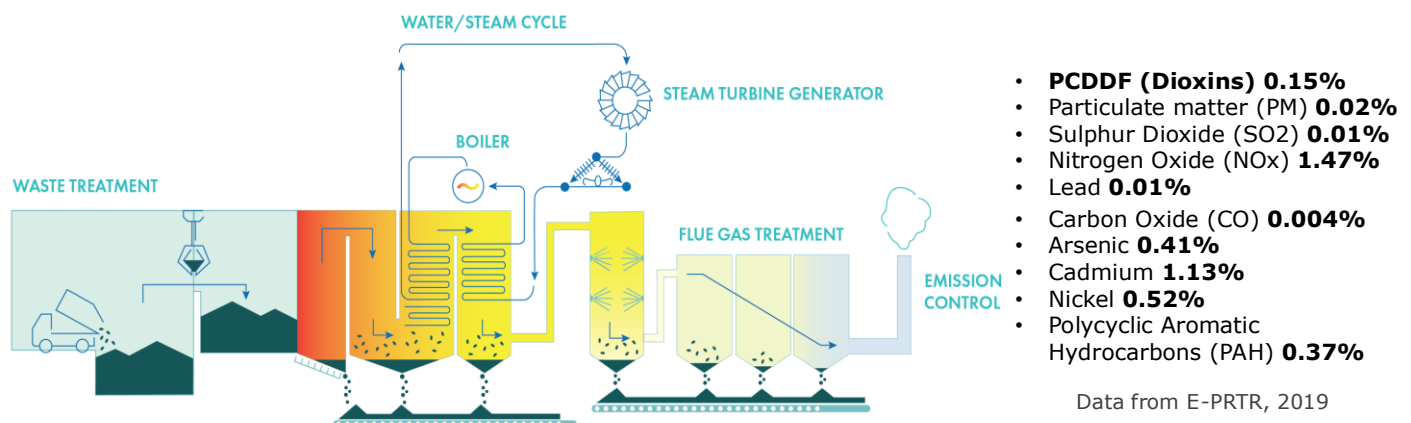
Key scientific and regulatory facts in favour of WtE

- **Dioxin Reality Check:** WtE contributes <0.2% of total industrial dioxin emissions in Europe (EEA, 2021). Traffic, households, and other sectors are significantly larger contributors.

- **Emission Control:** WtE plants operate under the **Industrial Emissions Directive (IED)** and BAT conclusions, with 24/7 monitoring and strict limits even during startup/shutdown phases.
- **Stack Emissions ≠ Local Pollution:** Studies in France, Italy, Portugal, the Czech Republic, and others consistently found **no correlation** between stack emissions and dioxins in the surrounding environment.



Inside a Waste-to-Energy plant And the sector's contribution to industrial pollution



EU WtE Plants have sophisticated flue-gas cleaning lines that guarantee very low emissions

- ✓ Industrial Emissions Directive & BREF Waste Incineration → **The most stringent environmental rules and thresholds cover the sector !**
- ✓ Waste Incineration treats the pollutants in the waste → **hygienisation** role in society!

Scientific studies refuting biomonitoring claims

Dioxins/furans are by-products of combustion, with potential health risks linked to high exposure levels. WtE facilities have been scrutinised for dioxin emissions, though recent studies show these emissions are often overstated.

Key studies and findings:

- **CEWEP Report: Dioxins and Waste-to-Energy Plants – State of the Art (2022):**
 - Based on extensive long-term data across Europe, the study concludes that there is no correlation between dioxins found in the environment and emissions from WtE plant stacks.
 - The report confirms that modern EU WtE plants emit extremely low levels of dioxins, often below detection limits, thanks to advanced combustion control and filtration systems.
 - It also highlights that WtE dioxin emissions account for less than 0.2% of total

industrial dioxin emissions in Europe, making the sector one of the least significant contributors.

- **"Research on Eggshell Contamination" by Jana Suzová and Pavel Veselý, (Czech Republic, 2022)**: Congener fingerprints of dioxins in contaminated eggs near WtE plants **did not match** the plant's emissions — source was likely contaminated soil. *For an AI translation of this text, please [see here](#).*
- **The actual impact of waste-to-energy plant emissions on air quality: a case study from Northern Italy (Milan's Politecnico, 2019)**: Road traffic contributes **orders of magnitude** more pollutants (NO₂, PM, PCDD/F) than WtE plants.
- **Karlsruhe Institute of Technology study (Germany, 2024)** shows **no significant PFAS emissions** from incineration.
- **DEFRA, UK Waste-to-Energy: Destruction of Persistent Organic Pollutants study (2023 – 2024)**: Demonstrated very high destruction rates for POPs in WtE plants, including in challenging test scenarios.
- **Czech Hydrometeorological Institute study (2022, Czechia)**: Provides monthly updated emissions data for Czech WtE plants, confirming consistent **compliance with emissions limits**, including for dioxins.
- **Proftech Analysis Report No. PW/14/12/21 (2021, Lithuania)**: Independent analysis showed that PCDD/F emissions from the Lithuanian WtE plant were significantly below EU legal thresholds, refuting claims made in activist biomonitoring reports.
- **INERIS Study No. DRC-13-136338-06193C (2023, France)**: French national institute provided methodological guidance on biomonitoring, warning against the use of eggs as a reliable indicator due to high variability and contamination from multiple sources (e.g. feed, soil, historic pollution).
- A [study](#) of over 100 WtE plants in France confirmed that all facilities operated well below the EU and French standard of 0.1 ng TEQ Nm⁻³.
- In Lazio, filtration technology achieved over 99.99% PM [emission](#) reduction, with local traffic emissions identified as the main PM source.
- Biomonitoring studies from [Turin](#) and [Emilia-Romagna](#) show minimal toxic or carcinogenic risks to nearby residents, corroborated by studies from Slovakia and Ontario.
- Under normal operating conditions, WtE plants [present](#) no significant risk of cancer or other health impacts when equipped with state-of-the-art technology.
- Lifecycle analysis of modernised WtE plants [demonstrates](#) significant emission reductions, reinforcing WtE's safety and environmental efficacy.

Comparative risk perspective

- Contrary to common perception, everyday activities like barbecuing or domestic wood burning often release significantly more dioxins than modern Waste-to-Energy plants. BBQs can emit up to 300 times more dioxins per kg of fuel than WtE! This stark contrast underlines the importance of basing environmental discussions on scientific data, not assumptions.
- The **United Nations Economic Commission for Europe** recently [recognised WtE's benefits](#). In a 2022 report, the UN body defined WtE as "the most sustainable solution for non-recyclable waste as it recovers energy and materials while providing an alternative to highly polluting landfills and waste exports."
- [European Industrial Emissions Portal](#)