THERMOMECHANICAL TREATMENT & Health Risks

Potential risks to human health from Thermomechanical Treatment Facilities (TTFs) (also known as waste-to-energy facilities) have been extensively reviewed. Modern TTFs equipped with air quality control devices and operated in accordance with current regulatory permits and standards have been demonstrated to have little to no impact on human health.

Study after study in North America find TTF health risks are minimal.

- A 3rd-party review conducted in 2022 assessed the residual risk from 54 large municipal waste combustors (LMWC) in the U.S using actual emissions data in accordance with U.S. EPA protocols. The study assessed both inhalation and multi pathway risks finding that the emission levels achieved by LMWCs provide "**ample margin for safety**" protecting human health compared to U.S. EPA thresholds.[1]
- In 2021, a literature review completed by the Earth Engineering Center, City College of New York concluded "**human health is not adversely impacted by waste-to-energy**."[2]
- An environmental epidemiological study conducted in an area within the City of Baltimore, Maryland in 2019 found **"no statistically significant associations"** between asthma rates and emissions of particulate matter 2.5 ($PM_{2.5}$), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) from the nearby waste-to-energy facility. [3]
- In 2018, a public health risk assessment (PHRA) commissioned by Metro Vancouver concluded that emissions from waste-to-energy facility owned by Greater Vancouver Sewerage and Drainage District in Burnaby British Columbia "***do not pose a health risk to people***". The findings of this PHRA were reported to be "**consistent with the past two decades of peer-reviewed scientific literature and government reports.**"[4]
- In 2017, Oregon Metro commissioned an independent comprehensive review of available literature on air quality health risk assessments and health surveillance programs for areas surrounding TTFs. They determined that there was no ***"predictive or actual increase in health issues*, including for those in vulnerable or sensitive 'at-risk' populations such as children or the elderly.**"[5]

How are health risks studied?

Assessing health risk of an emissions source is a scientific process. Inputs include:

Biomonitoring:
Direct measurement of the actual uptake or accumulation of chemicals in a potentially exposed human population. This includes the measurement of chemical compounds in the human body (blood, urine, breast milk or tissue).

Health Risk Assessment:
Provides a quantitative estimate of potential human health impact of predicted, modeled, or measured emissions.

Epidemiology Study:
Assesses documented health issues or events related to an air or other emission source (e.g. cancer incidence, birth outcomes).

- A study commissioned by the Durham and York regions in 2014, assessed the potential human health risk from the Durham-York TTF prior to its construction in the Ontario Province, Canada. Results suggested **"minimal risks to humans expected at approved operating capacity."**[6]

International research report low to no health risks associated with properly equipped and operated waste-to-energy operations.

- A 2019 UK study found "**no evidence of increased risk of infant mortality for children living close to municipal waste incinerators.**"[7]
- Long-term biomonitoring near three Dutch waste-to-energy facilities found "***no potential risk* with respect to human consumption quality of the investigated crops and products in the vicinity"**.[8]

- Public Health England risk assessment maintains **"that modern, well run and regulated municipal waste incinerators are not a significant risk to public health"** with negative health impacts associated with well-regulated waste-to-energy facilities ***"likely to be very small,"*** if even detectable."[9,10]
- A biomonitoring study in Portugal that measured dioxin in both exposed and control population groups concluded that emissions from waste-to-energy facilities "***did not impact dioxin blood levels"*** of nearby residents.[11]

For more information, please e-mail us:
sustainability@reworldwaste.com

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