

# Energy-from-Waste & Health Risk

## Do Emissions from EfW Present Health Risks?

A comprehensive 2017 review of available literature on air quality health risk assessments and health surveillance programs surrounding EfW facilities was done for Portland, Oregon. The review “determined that there was **not a predictive or actual increase in health issues**, including for those in vulnerable or sensitive “at-risk” populations such as children or the elderly.”<sup>1</sup>

Its conclusion is consistent with other reviews and studies:

- Three years prior, a similar comprehensive review of published risk assessment, biomonitoring, and epidemiology studies, performed for Metro Vancouver concluded that modern EfW facilities “**do not pose unacceptable health risks to local residents.**”<sup>2</sup>
- Public Health England found negative health impacts associated with well-regulated EfW facilities likely to be very small, **if even detectable.**<sup>3</sup>
- Long-term biomonitoring near three Dutch EfW facilities found “**no potential risk** with respect to human consumption quality of the investigated crops and products in the vicinity.”<sup>4</sup>
- The Massachusetts Department of Public Health found prevalence of childhood asthma in the Merrimack Valley—where several EfW facilities are located—**was not associated** with emissions of particulate matter (PM10) or volatile organic compounds (VOCs) from the local stationary sources.<sup>5</sup>
- A 2019 UK study found **no evidence** that exposure to, and living near, a modern EfW facility in compliance with current standards was associated with any excess risk of adverse birth outcomes.<sup>6</sup>
- A health risk assessment performed for the Montgomery County facility in Maryland found a **very low chance** (i.e., less than 1 chance in 1 million) for occurrence of potential carcinogenic health effects, well below the U.S. EPA’s upper limit of acceptable risk of 1-in-10,000 (or 100-in-1 million).<sup>7</sup> The assessment also found no expectation of non-carcinogenic health effects as a result of facility emissions.<sup>8</sup>
- A biomonitoring study in Portugal that measured dioxin in both exposed and control population groups concluded that emissions from EfW **did not impact dioxin blood levels** of nearby residents.<sup>9</sup>

### How are Health Risks Studied?

The potential health risks of an emissions source, like an Energy-from-Waste facility, are typically studied in one of three primary ways:

#### **Biomonitoring**

Measurement of chemicals or their metabolites (products of chemical compounds that have been transformed in the body) in blood, urine, breast milk, or tissues. Measures actual uptake or accumulation of chemicals in a potentially exposed population.

#### **Health Risk Assessment**

A systematic process to provide quantitative estimates of potential human health impacts of predicted, modeled, or measured emissions.

#### **Epidemiology Study**

Assessment of documented health issues or events (e.g. birth outcomes, cancer incidence) relative to an air or other emissions source.

## References

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- <sup>1</sup> Olsson Environmental Health Management (2017) *Metro Health Impact Assessment Evaluation of Landfills and Waste to Energy Options for Managing Municipal Solid Waste*. [https://www.oregonmetro.gov/sites/default/files/2017/07/06/Metro\\_WTE\\_Landfill\\_HIA\\_Final\\_with\\_appendices\\_20170706.pdf](https://www.oregonmetro.gov/sites/default/files/2017/07/06/Metro_WTE_Landfill_HIA_Final_with_appendices_20170706.pdf)
- <sup>2</sup> Inrinsk (2014) *Literature Review of Potential Health Risk Issues Associated with New Waste to Energy Facilities*. <http://www.metrovancouver.org/services/solid-waste/about/wte/PublicationsWTE/InrinskWTEReviewHealthIssuesMay282014.pdf>
- <sup>3</sup> U.K. Health Protection Agency (Now Public Health England), *The Impact on Health of Emissions to Air from Municipal Waste Incinerators*, 2010. <https://www.gov.uk/government/publications/municipal-waste-incinerators-emissions-impact-on-health>
- <sup>4</sup> van Dijk, C., W. van Doorn, B. van Alfen (2015) Long-term plant biomonitoring in the vicinity of waste incinerators in The Netherlands, *Chemosphere*, **122**, 45-51. <https://doi.org/10.1016/j.chemosphere.2014.11.002>
- <sup>5</sup> Massachusetts Department of Public Health (2008) *Air Pollution and Pediatric Asthma in the Merrimack Valley* <http://www.mass.gov/eohhs/docs/dph/environmental/tracking/asthma-merrimack-valley-report.pdf>
- <sup>6</sup> Ghosh, R.E. *et al.* (2019) Fetal growth, stillbirth, infant mortality and other birth outcomes near UK municipal waste incinerators; retrospective population based cohort and case-control study, *Environment International*, **122**, 151-158. <https://doi.org/10.1016/j.envint.2018.10.060>
- <sup>7</sup> U.S. EPA National Air Toxics Assessment Frequent Questions webpage, accessed March 25, 2019. <https://www.epa.gov/national-air-toxics-assessment/nata-frequent-questions>.
- <sup>8</sup> Rao, R.K. *et al.*, Multiple Pathway Health Risk Assessment and Multimedia Environmental Monitoring Programs for a Municipal Waste Resource Recovery Facility in Maryland, *Proceedings of the 12<sup>th</sup> North American Waste to Energy Conference, May 17-19, 2004*, ASME. <http://www.seas.columbia.edu/earth/wtert/sofos/nawtec/nawtec12/nawtec12-2207.pdf>
- <sup>9</sup> Reis M. *et al.* (2007) Determinants of dioxins and furans in blood of non-occupationally exposed populations living near Portuguese solid waste incinerators, *Chemosphere* **67**, S224-230. <https://doi.org/10.1016/j.chemosphere.2006.05.102>