

Trash incineration FACT CHECK:

Covanta's "Energy-from-Waste & Health Risk" flyer

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Do trash incinerators trash public health?

Several health studies say yes. Trash incinerators – often rebranded with public relations terms such as “waste-to-energy,” “energy from waste,” or “resource recovery” – are the most polluting way to manage waste or to make energy.¹ There are health studies that find connections to cancers, heart disease, birth defects, respiratory problems, and other health impacts.

A 2019 study published in the *International Journal of Environmental Research and Public Health* sums up the research this way (each number references a study):

“Although various uncertainties limit the overall interpretation of the findings, there is evidence that people living in proximity to an incinerator have an increased risk of all types of cancer [12,13], including stomach, colorectal, liver, renal, pleural and lung cancer, gallbladder and bladder for men, non-Hodgkin lymphoma and leukemia, and childhood-cancer/leukemia [13,14]. Studies on incinerators in France and in Italy have suggested an increased risk of non-Hodgkin lymphoma (NHL) [15], soft-tissue sarcoma [16,17], lung cancer [18], and neoplasia of the nervous system and liver [12]. Although the studies conducted by Shy et al. [19] and Lee and Shy [20] did not show respiratory effects. Other studies have reported increases in respiratory diseases or symptoms in populations residing near incinerators [21–24] and in children [25,26]. Other epidemiological studies on incinerators have shown an excess risk of cardiovascular diseases [21,23,24,27,28] and urinary diseases [21].”²

The study found that that men with higher exposures to incinerator pollution had statistically significant increases in death from **lymphohematopoietic cancers** (leukemia, non-Hodgkin lymphoma, multiple myeloma, etc.),

cardiovascular diseases, and “natural causes;” and in women, increased death from **acute respiratory disease**.

A 2013 study of incinerators in Spain is very clear when discussing their findings. The conclusion states: **“Our results support the hypothesis of a statistically significant increase in the risk of dying from cancer in towns near incinerators** and installations for the recovery or disposal of hazardous waste.”³

An extensive literature review published in 2013 found the research inconclusive for many diseases, with some studies finding significant health impacts, but more studies unable to do so. However, some of the stronger trends that emerged were for **larynx cancer** (“three ecological studies and one cohort study found convincing associations”), **birth defects and reproductive disorders** (including cleft palate, urinary tract defects, spina bifida, and cardiac defects), a **decrease in respiratory function and an increase in respiratory wheezing in children**.⁴

A 2013 study of eight incinerators in Italy found that “maternal exposure to incinerator emissions, even at very low levels, was associated with **preterm delivery**.”⁵

A 2011 study, also from Italy, found that women with the highest levels of exposure to heavy metals from incinerator pollution suffered **increased death in general, and specifically from heart disease**. In men, they found increased hospitalization for **chronic heart failure and heart attacks**.⁶

After noting the challenging nature of different health study methods, a 2004 review of incinerator health studies found that, “analysis by specific cause, notwithstanding the poor evidence for each disease, has **found nevertheless significant results for lung cancer, non-Hodgkin lymphoma, soft tissue sarcomas and childhood cancers**.”⁷

¹ Energy Justice Network, Incineration, www.energyjustice.net/incineration

² Romanelli, et al. (2019). Mortality and Morbidity in a Population Exposed to Emission from a Municipal Waste Incinerator. A Retrospective Cohort Study. *International Journal of Environmental Research and Public Health*. 16. 2863. www.ncbi.nlm.nih.gov/pubmed/31405116

³ Garcia-Perez, et al. (2012). Cancer mortality in towns in the vicinity of incinerators and installations for the recovery or disposal of hazardous waste. *Environment International*. www.ncbi.nlm.nih.gov/pubmed/23160082

⁴ Mattiello, et al. (2013). Health effects associated with the disposal of solid waste in landfills and incinerators in populations living in surrounding areas: A systematic review. *International Journal of Public Health*. www.ncbi.nlm.nih.gov/pubmed/23887611

⁵ Candela, et al. (2013). Air Pollution from Incinerators and Reproductive Outcomes A Multisite Study. *Epidemiology* (Cambridge, Mass.). 24. 863-70. www.ncbi.nlm.nih.gov/pubmed/24076993

⁶ Ranzi, et al. (2011). Mortality and morbidity among people living close to incinerators: A cohort study based on dispersion modeling for exposure assessment. *Environmental Health*. 10. 22. www.ncbi.nlm.nih.gov/pubmed/21435200

⁷ Franchini, et al. (2004). Health effects of exposure to waste incinerator emissions: A review of epidemiological studies. *Annali Dell'Istituto Superiore di Sanità*. 40. 101-15. www.ncbi.nlm.nih.gov/pubmed/15269458

The ABCs of knowledge about health effects from industrial air pollution:

A → B Incinerators (A) release chemicals (B)

B → C Those chemicals (B) cause health effects (C)

A → C Incinerators (A) cause health effects (C)

Don't let polluters take your common sense away. We know that trash incinerators are among the largest air polluters (A → B), and that the pollutants they release cause a wide range of health problems (B → C). Some health studies can show the connection (A → C), but many cannot due to a range of reasons discussed below.

There are gaps in knowledge in all of the above.

A → B: There is continuous emissions monitoring data on just 3-4 pollutants from incinerators and other industrial facilities. Other pollutants are tested once per year, if at all. We have a basic idea of which pollutants are released and in what quantities. However, this data is underestimated since industry refuses to use modern continuous monitoring technology for most pollutants, and federal and state environmental agencies don't require it. (Some local governments, like Baltimore, now do.⁸) Also, incinerator operators have been caught manipulating their tests to make emissions seem lower.

B → C: We have a good idea of what these pollutants do to human and environmental health. There are thousands of studies on health effects from chemical exposures, but it can never be complete. With hundreds of thousands of chemicals in industrial use and many more created each year, not all chemicals are studied for every possible health impact. Certain chemicals are studied in depth, but most are barely understood.

Historically, many studies are of healthy, adult, white male workers, and don't address racial health disparities, or reflect the impacts of chemicals on more sensitive populations: women, children, the elderly, or people with compromised immune systems or other existing health problems. Combinations of chemical exposures are rarely studied, and sometimes 2+2=5 when people are exposed to combinations of chemicals. So-called "safe" and allowable exposure levels are based on one chemical at a time, without looking at sensitive populations or the existing body burden of chemical exposures accumulated over a lifetime.

A → C: It's nearly impossible to design a perfect health study connecting a specific pollution source to specific health problems in a specific population of people.

Why is it hard for a health study to find a connection?

Other sources of pollution: Incinerators are often located next to other industrial source of air pollution, so it's nearly impossible to determine what health effects came from one vs. another, or the combination.

Pollution moves: It depends a lot on wind direction and distance. Some pollutants fall very locally, while others (like dioxins) reach as far as the Arctic. Some of the most toxic pollutants, like dioxins and mercury, climb up the food chain in animal fat. Animal products are shipped all over, so this further dilutes the health impacts as dietary exposure routes are spread far beyond any study area.

People move: Diseases (especially cancer) can take decades to manifest. People move in and out of the community over time. Many also move daily for work, which can change their exposure levels significantly. All of this dilutes the affected population studied.

Can't quantify the dose: We usually don't know how much exposure to pollution each person receives. Studies often use distance, which isn't as good as modeling exposure or taking biological samples for pollutants known to be released.

Given the uncertainties, it's impressive when a study manages to find health impacts, and many have.

A → B → C studies: Some studies use modeling to calculate expected damage to health. They'll take the emissions data, use air modeling to calculate how much of a given chemical will reach people, and then factor in health consequences.

A 2017 study of just one pollutant (particulate matter) from the Wheelabrator Baltimore trash incinerator found that this pollution causes an estimated \$55 million in annual damage to health in people across several states, primarily from premature death.⁹

A 2011 study looked at six major pollutants from 17 U.S. industries and found that, more than any other industry, the economic health damage from trash incinerators outweighed the industry's economic benefits.¹⁰ Even oil refineries and fossil fuel power plants were less harmful.

⁸ Baltimore Clean Air Act. www.cleanairbmore.org/cleanairact

⁹ Written Report of Dr. George D. Thurston Regarding the Public Health Impacts of Air Emissions from the Wheelabrator Facility, Nov. 20, 2017. www.cleanairbmore.org/uploads/wheelabrator-health-impacts.pdf

¹⁰ Muller, Nicholas Z., Robert Mendelsohn, and William Nordhaus. 2011. "Environmental Accounting for Pollution in the United States Economy." *American Economic Review*, 101 (5): 1649-75. www.aeaweb.org/articles?id=10.1257/aer.101.5.1649

How Covanta Misleads

Covanta: “Study after study have shown that living near an Energy from Waste (EfW) facility EfW facility [sic] with modern air pollution control equipment does not have adverse impacts on health.”

Fact: Covanta ignores the fact that there are other “studies after studies” that DO show health impacts in communities around trash incinerators. (See page 1.)

It’s hard to say, without researching every facility examined in each study, whether each facility has “modern air pollution control equipment,” however Covanta defines that. Only one trash incinerator out of 72 in the U.S. uses “modern air pollution control equipment,” though, and it’s located right next to an old trash incinerator in Florida that does not, so no health study in the U.S. could meet Covanta’s criteria.¹¹

How does Covanta get away with arguing that the health studies are on their side?

He who pays the piper calls the tune. The first two of their eight health study citations are to literature reviews. One was conducted by HDR, a large consulting company that does engineering work to build trash incinerators.¹² The other was hired by Metro Vancouver, which runs a trash incinerator and has proposed building several more, amid much controversy. They hired Intrinsik, a consulting company that describes themselves as having “over 30 years of helping our clients achieve their goals.”¹³ Covanta also cites Columbia University scientists who are with a “tobacco science” outfit that is funded by the incinerator industry to promote incineration.¹⁴ The remaining studies are cherry-picked from a large body of available research.

In the literature reviews they cite, they leave out some of the studies that found health effects, and of the ones that did find health impacts, they either gloss over them while admitting their findings, or they find reason to exclude the results.

The “recent review” cited first by Covanta is a report by HDR claiming to be a literature review of “air quality health risk assessments and health surveillance programs surrounding WTE facilities” which “determined that there was not a predictive or actual increase in health issues....” However, the report itself admits that it “was not a formal systematic review of the literature,”¹⁵ though Covanta describes it as “comprehensive.”

Covanta then summarizes Intrinsik’s report as saying that incinerators “do not pose unacceptable health risks to local residents.” However, the report talked about real risks, including increased birth defects, higher dioxin levels in people’s blood, and “non-cancer” risks that were “unacceptable.” Other studies in the report found health problems, but at levels deemed “acceptable” by government regulations. Intrinsik outright dismisses a study from Spain which found statistically significant increased cancer deaths in towns around trash incinerators. The study was dismissed because Spain’s incinerators were “old” (10-20 years) and the study had no mention of what air pollution controls the incinerators used. Except for a handful of expanded or rebuilt facilities, Covanta’s U.S. fleet is now 25-40 years old as of 2020. At the time of the Intrinsik review, they would have been 19-34 years old, making Spain’s incinerators seem young by comparison. Also, Intrinsik didn’t bother to look up info on the air pollution controls. We did, and found that they all have scrubbers and baghouses, similar to Covanta’s fleet.

Covanta’s pollution triggers asthma attacks. Covanta’s incinerator pollution is a major source of the nitrogen oxides (NOx) that trigger asthma attacks. Covanta is correct that the exact *cause* of asthma is unknown. They use this fact to distract from the fact that they trigger asthma attacks in those who already have asthma. The American Lung Association has written to Washington, DC City Council objecting to a contract to burn waste at the highly polluting Covanta plant in Lorton, VA due to concern over asthma and other respiratory problems.¹⁶

¹¹ “Modern air pollution control equipment” includes Selective Catalytic Reduction (SCR) for reducing emissions of nitrogen oxides (NOx) that trigger asthma attacks, keeping NOx below the modern limit of 45 parts per million (ppm). The only incinerator with this equipment in the U.S. is West Palm Beach #2, in Florida. This new plant started in 2015 and Covanta has taken over operation of this county-owned facility. No other facility in Covanta’s fleet uses these modern controls. The best of their other incinerators get their NOx levels down to around 85-90 ppm – twice the modern limit. They do this with Selective Non-Catalytic Reduction (SNCR), which lacks the catalyst needed to reduce NOx much further. Some of their incinerators lack these and other basic controls, including the biggest incinerator in the nation, in Chester, PA, which lacks 2 of the 4 common controls (SCR/SNCR controls for NOx and carbon injection for toxic chemicals like dioxins and mercury). See

www.ejnet.org/chester/pollutioncontrol.html for a list of pollution controls at Covanta incinerators. Chester’s environmental health has been studied and is very poor. Their childhood asthma hospitalization rate is 3 times the state average, in part due to Covanta’s excessive NOx emissions. See

www.ejnet.org/chester/asthma.html Covanta is the largest industrial air polluter in Chester and the worst in the 7-county Philadelphia region. See

www.energyjustice.net/files/pa/philly/top10.pdf

¹² www.cleanairbmore.org/uploads/NMWDAConsultants.pdf (see p.2)

¹³ www.intrinsik.com/about/

¹⁴ www.seas.columbia.edu/earth/wtert/newwtert/sponsors/

¹⁵ www.oregonmetro.gov/sites/default/files/2017/07/06/Metro_WTE_Landfill_HIA_Final_with_appendices_20170706.pdf (see p.184)

¹⁶ See: www.energyjustice.net/files/dc/AmericanLungLetter.pdf