

Ban the Burn at Every Turn Information Packet

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Please contact Mike Ewall with any questions at 215-436-9511 or mike@energyjustice.net.

56 Organizations (and counting!) supporting the Ban the Burn at Every Turn Act

WHEREAS, Baltimore suffers from poor air quality, leading to health problems including asthma attacks, heart attacks, stroke, COPD, and cancer; and

WHEREAS, Baltimore City's childhood asthma rate is twice the national average, impacting 1 in 5 children; and

WHEREAS, the largest single source of nitrogen oxide (NOx) air pollution in the city, contributing to asthma attacks, is the Wheelabrator Baltimore (BRESKO) trash incinerator, the largest trash incinerator in Maryland, which is responsible for 58% of the NOx pollution from Baltimore industry, equivalent to half of the city's cars or half of the city's trucks; and

WHEREAS, Black residents of Baltimore experience the worse impacts from asthma, cancer, stroke, and premature deaths from COVID-19 – all aggravated by Wheelabrator's pollution – and the community most impacted by Wheelabrator's presence fits a sad national trend of environmental racism; and

WHEREAS, since 2017, Baltimore City Council has unanimously adopted the Baltimore Clean Air Act, and seven resolutions calling for city action to reduce and eliminate incinerator pollution, to move toward Zero Waste, and for the city to aggressively defend the Baltimore Clean Air Act; and

WHEREAS, Mayor Jack Young, City Solicitor Dana Moore, and the Department of Public Works seem inclined to continue burning the city's trash beyond the current contract which expires at the end of 2021; and

WHEREAS, any new contract with Wheelabrator would tie the hands of the new mayor and city council, and lock the city into more years of pollution from an aging incinerator that will still be the city's #1 air polluter even if they were to meet the requirements of the Baltimore Clean Air Act; and

WHEREAS, settling the Baltimore Clean Air Act appeal would leave in place a court ruling that strips away the right of all local governments in Maryland to adopt clean air laws; and

WHEREAS, settling the appeal also means that Baltimore taxpayers must foot the bill of up to \$95 million in air pollution controls at Wheelabrator, plus other repair costs as this end-of-life incinerator breaks down over the term of any new contract, potentially doubling or tripling the city's waste disposal costs; and

WHEREAS, cutting a deal with Wheelabrator in order to drop the Baltimore Clean Air Act appeal is a triple win for Wheelabrator and a loss for the city, as local clean air laws will be illegal, Wheelabrator will continue to operate, and will profit from city taxpayers who will have to pay for long overdue pollution controls while also suffering the economic consequences of the health impacts from breathing Wheelabrator's pollution; and

WHEREAS, incinerators are unnecessary and are the most expensive and polluting way to manage waste or to make energy, and

WHEREAS, the city's publicly-owned landfill is far less of a public health danger and has been pursuing permits for an uncontested expansion for over six years – an expansion necessary to take more of Wheelabrator's incinerator ash; and

WHEREAS, the alternative to incineration already exists as this landfill could take unburned trash while no longer having to take ash from out-of-city trash burned at Wheelabrator; and

WHEREAS, less costly Zero Waste solutions can more than double the life of the landfill by slowing down the city's waste generation, with two solutions (Save as You Throw, and curbside composting collection) able to quickly cut waste generation by about 60%, and further reductions possible by mandating deconstruction, and adopting other Zero Waste solutions; and

WHEREAS, Zero Waste solutions will produce 5-10 times as many jobs, reduce air pollution, and save and improve lives by reducing asthma, cancer, heart attacks, and premature deaths from COVID-19; and

WHEREAS, some experimental and polluting incineration schemes that have sought to locate in Baltimore insist that they're not incinerators, including waste-to-fuel facilities such as the one that would have fed processed trash to burn at the Energy Answers incinerator – proposed for Curtis Bay and defeated in 2016 – which sought to build within one mile of a school (illegal by state law) by claiming that they're a power plant, not an incinerator;

THEREFORE BE IT RESOLVED that the undersigned organizations urge Baltimore City Council to adopt the "Ban the Burn at Every Turn" Act barring city contracts with waste incinerators or waste-to-fuel facilities; and

BE IT FURTHER RESOLVED that the undersigned organizations urge the Baltimore City Board of Estimates not to approve any new contract to continue the use of the Wheelabrator Baltimore trash incinerator, or to continue the burning of the city's waste and recyclables in any form.

Signed,

[An End to Ignorance, Inc. / Bmore Community Food](#)

[Arabber Preservation Society](#)

[Baltimore Beyond Plastic](#)

[Baltimore City Forestry Board](#)

[Baltimore City Green Party](#)

[Baltimore Compost Collective Program](#)

[Baltimore Free Farm](#)

[Baltimore Green Space - A Land Trust for Community Managed Open Space Inc.](#)

[Baltimore Nonviolence Center](#)

Baltimore Phil Berrigan Memorial Chapter [Veterans For Peace](#)

[Black Money Matters](#)
[Blue Water Baltimore](#)
[BotaniCuisine, LLC](#)
[Call to Action Maryland](#)
[Chesapeake Physicians for Social Responsibility](#)
[Civic Works, Inc.](#)
[Cool Green Schools](#)
[Direct Action Everywhere Baltimore](#)
[Echotopia LLC](#)
[Energy Justice Network](#)
[Extinction Rebellion Baltimore](#)
[Govans Ecumenical Development Corporation](#)
[Hampden Community Council](#)
[Harbor West Collaborative](#)
High Note Consulting, LLC
Holistic Wellness and Health
[Institute for Local Self-Reliance](#)
[Interfaith Power & Light \(DC.MD.NoVA\)](#)
[Maryland Campaign for Environmental Human Rights](#)
[Maryland Conservation Council](#)
[MOM's Organic Market](#)
[Neighborhood Sun Benefit Corp](#)
[No Boundaries Coalition](#)
[North Ave Mission](#)
[Northeast Catholic Community \(NECC\) Peace/Justice Committee](#)
Northern Star Services
[Patterson Park Neighborhood Association](#)
[Planned Parenthood of Maryland](#)
[Popular Resistance](#)
[Progressive Maryland](#)
Ramsay Construction
[Sierra Club - Greater Baltimore Group](#)
[Soup's On Baltimore](#)
Social Worker Peer Support Network, Inc.
[South Baltimore Community Land Trust](#)
[St. Anthony of Padua, St Dominic and Most Precious Blood Catholic Churches](#)
[St. Ignatius Catholic Community](#)
[St. John Lutheran Church, Brooklyn](#), Environmental Action Committee
[St. Matthew Catholic Church](#)
[St. Vincent de Paul Church Green Team](#)
[Sunrise Movement Baltimore](#)
[Teaching Artist Institute](#)
[United Workers](#)
[Urban Environmental Toxic Tour](#)
[Urban Teachers](#)
[Westport Neighborhood Association](#)

The “Ban the Burn at Every Turn” Act

Since 2017, City Council has unanimously passed seven resolutions and the Baltimore Clean Air Act, all aiming to move the city away from incineration and toward Zero Waste. However, new incinerator companies continue to try to locate in Baltimore, and the threat remains of the city signing a new long-term contract to extend the life of the 35-year old Wheelabrator trash incinerator beyond the life span of any such facility in the nation. Allowing Wheelabrator to operate beyond 2021 when its current ends would be very costly in health, environmental, and economic terms. The “Ban the Burn at Every Turn” Act would prohibit the city from contracting with any form of waste incinerator, and closes any loopholes to ensure that all types are covered.

Incinerators:

Conventional waste incinerators like Wheelabrator Baltimore (BRESKO) are covered in §41-4(A)(2)(I)(A). Trash incineration is the most expensive and polluting way to manage waste or to make energy, and Wheelabrator is Baltimore’s #1 air polluter, and would still be so even if they were to comply with the Baltimore Clean Air Act and dramatically reduce their air pollution.



Gasification and pyrolysis are two-stage incinerators, described in §41-4(A)(2)(I)(B). These types of incinerators use heat and pressure to turn waste into a gas in the first step, then typically burn the gas in a second stage. When they do so, EPA’s legally defines them as incinerators, even though the industry likes to insist that they are not incinerators by focusing on the lack of burning in the first stage. These can be just as polluting as normal incinerators, but often have fantastic claims to the contrary. Despite the technology being around for decades, there are no

commercial-scale waste gasification or pyrolysis plants in the U.S. Geosyntec’s recent solid waste plan for the city does not recommend it, and admits that this technology is untested, unproven, costly, and is not designed to work on trash.

Waste to Fuels (WTF)

Waste-to-fuels facilities, described in §41-4(A)(2)(I)(C), are those that make waste into a burnable fuel usually to be burned elsewhere. When Energy Answers tried to build the nation’s largest waste incinerator in Curtis Bay, they got around a state ban on incinerators within one mile of a school by arguing that they were not an incinerator, but a power plant burning “refuse-derived fuel” or RDF (pictured on right). RDF is just trash with glass and metal removed, and compressed into a pellet. The Act would prevent the city from contracting with an RDF plant that would market processed trash to be burned. Similarly, tires and sewage sludge are sometimes shredded or pelletized and marketed as fuel the same way, often to burn in cement kilns, paper mills, or coal power plants – all of which are regulated even less than normal incinerators. Some experimental waste-to-fuels facilities seek to convert waste into liquid fuels instead.



Exemptions

The Act does not limit the use of landfills because of their gas collection systems where landfill gas is usually burned for energy. It also does not limit the use of anaerobic digestion, which is often used for sewage sludge and sometimes food waste. Anaerobic digestion is like composting, but within a vessel, so that methane is generated, captured, and burned for energy. Since the waste is not directly burned in either of these processes, it’s far less polluting, and is not a concern. In fact, anaerobic digestion is a preferred method to treat sewage sludge and the organic fraction of trash before landfilling it, to avoid gas and odor issues at landfills. The Act also allows the Board of Estimates to make an exception if there are types of waste that the state requires to be incinerated, which, at this time, appears to be none.

Life After Wheelabrator

Where will our trash go??

Wheelabrator is now 35 years old. With a new 5-10 year contract to continue burning after 2021, the incinerator would be operating until the ripe old age of 41-46. Only one incinerator in the country has made it past the age of 40 without being completely rebuilt. The average lifespan of the 39 trash incinerators that have closed since 2000 is just 22 years old. Much younger incinerators, like the one in Montgomery County, are facing increasing operations and maintenance costs from disrepair and things breaking down. It's unreasonable to invest \$95 million in air pollution controls for a facility at the end of its life that will only get more costly.

Baltimore is fortunate in that it has its own publicly-owned landfill: Quarantine Road Landfill (QRL). Most cities have to rely on private facilities outside of their borders to take their trash. One major difference between public and private facilities is that public ones can choose not to take trash from outside of their borders.

Where will Baltimore's trash go if Wheelabrator closes? The city's own landfill.

But aren't landfills bad? Yes. Of course. However, there's a landfill at the end of the picture no matter what. We have three main options:

1. Direct landfilling (bad, but better than incineration)
2. Incineration → toxic ash to landfill ([most polluting and expensive](#) option)
3. Zero Waste with Material Recovery & Biological Treatment before landfill ([best option](#), economically & environmentally; avoids having gassy, stinky landfills)

[Material recovery means pulling out more recyclables from what people throw in the trash. Biological treatment means stabilizing the organic fraction in the trash so that it breaks down in a controlled environment like a digester where gases can be collected.]

Landfills are bad, but incinerators are worse. For every 100 tons burned in an incinerator, 30 tons become toxic ash that go to the landfill. The other 70 tons become air pollution. It's not the size of landfills that is harmful, but the toxicity. Ash makes landfills more toxic.

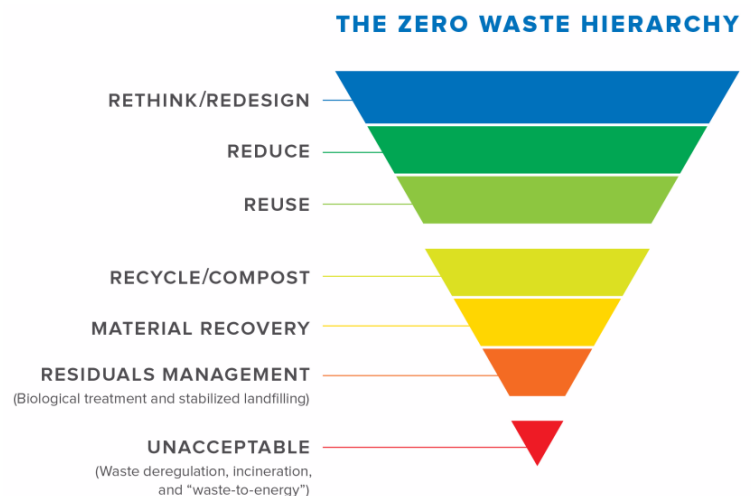
Won't the landfill fill up faster if we don't burn? Yes, but not by much because we no longer have to take other people's trash and ash – and we can and must reduce waste!

With the right policies and programs in place, Wheelabrator can close on 12/31/2021 when the current contract ends, the city's Quarantine Road Landfill will have room until the planned expansion is ready (projected for 2026), and the expanded landfill can last until at least 2040 without needing a new transfer station to export trash to PA and VA landfills.

How to fill up Quarantine Road Landfill as slowly as possible:

- 1) **Stop importing waste:** In 2019, 62% of Wheelabrator's trash came from the city. 28% was imported from Baltimore County, and the rest from 5 other MD Counties, and 6 states (NC, NJ, WV, OH, PA, & GA). From day one of ending the relationship with Wheelabrator, we can stop importing trash and filling the landfill with ash from other communities.
- 2) **City's landfill is expanding, anyway:** An expansion of the Quarantine Road Landfill is already in the works, and has been going through permitting processes with the state for over six years now. It's been planned because it's filling up with Wheelabrator's ash, and the expansion would be needed even if Wheelabrator stayed open. DPW has stated that the expansion will be ready by 2026. It's taking this long only because DPW has dragged their feet. It doesn't take 12 years to permit and built a landfill expansion, unless there is community opposition slowing it down. There is no opposition to this expansion. Once it's ready, the city will have about 10-25 years of additional landfill capacity, depending on how successful the city is in reducing waste to slow down the pace of filling the landfill.
- 3) **Some waste is already exported:** There are five transfer stations serving the city already. In 2018, 12% of the city's waste was exported, mainly to landfills in PA and VA. If the city fails to reduce waste effectively before the QRL expansion is ready, this existing infrastructure can be used to export just enough waste to bridge the gap without building an expensive new transfer station.

- 4) **Follow the Zero Waste Hierarchy.**
On [6/5/2017](#), city council called on the city to adopt a Zero Waste plan. On [5/14/2018](#) city council condemned the biased plan DPW conducted anyway and called on the city to explicitly follow the Zero Waste Hierarchy. On [3/9/2020](#), city council endorsed the [Fair Development Plan for Zero Waste](#).



See the official definition of [Zero Waste](#), the [Zero Waste Hierarchy](#), and more at zwia.org/policies.

- 5) **Plastic bans:** The city passed a polystyrene ban, and could continue to ban problematic materials like single use plastics, dramatically reducing waste.

6) **Get the bins right!** The city gave everyone large green trash bins, but charges for small yellow recycling bins. This is the wrong size, color, and cost. DPW is finally poised to provide free recycling bins to city residents. They must be the largest of the bin sizes, and should be blue to match the common color scheme used elsewhere. Experience from other cities has shown that the size of the bins matters, and that collecting trash once every two weeks is an effective way to get people to compost (with composting and recycling collected weekly). [San Francisco](#) uses 64-gallon blue recycling bins, 32-gallon green composting bins, and 16-gallon black trash bins as pictured.



- 7) **Unit Pricing (pay per bag/bin):** The most effective, and cost-effective¹, way to quickly reduce waste is known as “Pay as You Throw” (PAYT) or “Save as You Throw” – where you pay for each bag of trash you put out, but recycling and composting are collected for free. 10,000 communities in the U.S. do this. Where they do, they find an immediate 44% reduction in the amount of trash sent to disposal. It even encourages reduction, as there is a 28% decrease in total discards (waste plus recycling).² Nothing works better, and it’s only fair. With electricity, gas, and water, we pay for how much we use. However, with waste, our neighbor can put out 10 bags a week and pay the same as you do if you put out just one. The city needs to focus on how to adopt Save as You Throw ASAP, including for multi-family residents. Montgomery County is exploring this, and heard great presentations by [SERA](#) and [Waste Zero](#). Increased illegal dumping is rare and temporary, and can be solved by providing better bulk item pickup service.
- 8) **Curbside composting collection:** Composting food scraps and yard waste can reduce waste 25-30% while also avoiding landfill gas generation that contributes to odors and global warming. To get people composting food scraps, you need to have trash picked up every two weeks, and composting and recycling weekly. People get the point when they notice that what stinks in their trash is the food scraps, and if they want it not to stink, they need to put it in the proper bin that is collected more often.
- 9) **Deconstruct, don’t demolish:** Construction and demolition waste is the single largest waste stream. More jobs and less waste comes from carefully dismantling buildings rather than demolishing them. [DPW’s study](#) agrees (see p.48), calling for a city-wide [deconstruction](#) mandate in place of demolition, to reuse and recycle building materials. We can also require [use of recovered/recycled materials](#) in new construction.

¹ <https://www.montgomerycountymd.gov/SWS/Resources/Files/master-plan/pay-as-you-throw-sera.pdf> – see slide 5 (top right on p2)

² <https://www.montgomerycountymd.gov/SWS/Resources/Files/master-plan/pay-as-you-throw-waste-zero.pdf> – see slides 8 and 17. Slide 8 shows the immediate drop in waste disposal of 44% on average, and shows the results from Sanford, ME, where waste disposal fell dramatically upon starting PAYT, rose again once it was canceled, then dropped again once it was re-adopted. Slide 17 shows that it's not just shifting waste to recycling, but as waste disposal drops 44%, waste plus recyclables also drops 28%, showing the impact of PAYT on people reducing consumption.

What does it all cost??

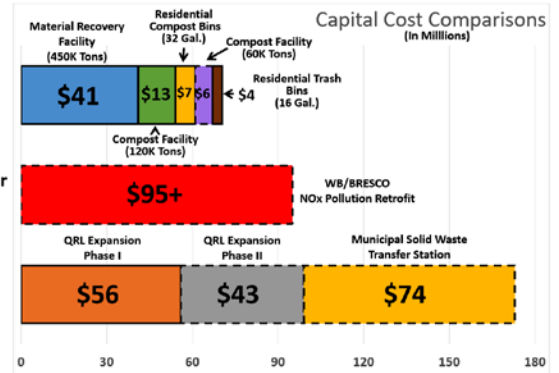
Incineration is widely understood to be more expensive than landfilling, even by the admission of two waste industry trade associations (including the incinerator industry's trade association), plus an industry admission in the Baltimore Clean Air Act lawsuit filings. See [here](#).

Public sector assets like Quarantine Road Landfill or new city-owned recycling and composting infrastructure are cheaper than using privatized services where companies have to turn a profit for shareholders.

Zero Waste solutions are cheaper than any form of disposal.

Current and Expected Tip Fees

\$56.33/ton	2020 cost of disposal at Wheelabrator under current contract
\$67.50/ton	Projected cost of Quarantine Road Landfill (leaving 30% of the airspace in contingency for emergency use)
\$71.00/ton	Cost of a new 10-year contract with Wheelabrator
\$84.00/ton	Cost of a new 5-year contract with Wheelabrator



See [Draft Recycling and Solid Waste Management Master Plan](#), June 2020, pp. 63 & 76.

If the city signs new contracts with Wheelabrator, and it includes the \$95 million cost of new air pollution controls, city taxpayers will be on the hook for the cost of Wheelabrator's upgrades. The cost of continuing to use Wheelabrator's incinerator will likely be higher than projected by Geosyntec (above) because:

- Wheelabrator will insist that the \$95 million cost of pollution upgrades will need to be covered by a guaranteed commitment of waste. If the city won't agree to a "put-or-pay" clause that ensures Wheelabrator is paid even if the city doesn't provide the waste, then Wheelabrator will need to charge more and take a risk they're unlikely to take.
- Baltimore County is Wheelabrator's 2nd largest waste customer after the city, and is moving away from sending waste to Wheelabrator. Wheelabrator is currently suing Baltimore County for \$32 million for not providing enough waste to their incinerator. If the county stops using Wheelabrator, Wheelabrator will have to recoup the cost of controls from the city to be able to lower its prices to attract waste from other communities.
- Baltimore City is planning to reduce waste by up to 90% by 2040. If the city is successful in reducing waste in the next 5-10 years, there won't be enough tipping fee revenue for Wheelabrator to cover the cost of their expensive pollution upgrades, and Wheelabrator will seek to have the city cover this by other means in any new contract.
- The city pays about \$11 million a year to Wheelabrator in tipping fees. Another \$95 million equates to nearly 10 years of the current cost of burning trash. A ten year contract could roughly double the city's disposal costs.
- The incinerator is already near the end of its life. Operations and maintenance costs as old incinerators break down become prohibitive. Connecticut just decided they need to retire their largest incinerator because the cost to refurbish it is \$333 million that the state and towns cannot afford. We cannot expect the 35-year old Wheelabrator incinerator to make it into its 40s without incredible cost.
- The [health consequences](#) of using incineration are not factored into this, but [asthma](#), cancer, and [early deaths](#) from breathing fine particulate matter (which also contributes to increased [COVID-19 deaths](#)) amounts to at least tens of millions of dollars a year in economic harm.

www.baltimoresun.com/opinion/op-ed/bs-ed-op-1001-wheelabrator-baltimore-clean-air-20200930-i2tndiid5gtjfk5dwlhrny6u-story.html

Baltimore needs to stick with the plan of letting the Wheelabrator trash incinerator close | COMMENTARY

By Mike Ewall
For The Baltimore Sun |
Sep 30, 2020 at 8:00 AM



A garbage truck waits to enter the Wheelabrator Baltimore incinerator in Westport. The incinerator processes up to 2,250 tons of post-recycled waste daily. (Jerry Jackson / Baltimore Sun)

The right to breathe clean air in Baltimore is at risk. For 35 years, Baltimore’s air has been fouled by the city’s [largest air polluter](#), the Wheelabrator/BRESCO trash incinerator. This large smokestack by I-95 with “BALTIMORE” emblazoned on it spews toxic lead, mercury, dioxins, particulate matter, acid gases and nitrogen oxides into our air, contributing to asthma attacks, cancer, COPD, heart attacks, strokes and learning disabilities.

A [study](#) of just one of these pollutants found that Wheelabrator’s pollution causes \$55 million in annual harm to health, mostly from cutting lives short. [Harvard](#) found this same pollutant (fine particulate matter) increases deaths from COVID-19. With Black residents [suffering the most](#) from COVID-19 deaths in Maryland, this is a social justice issue that cannot be ignored.

Thankfully, Baltimore City Council has been routinely standing up for the community in supporting efforts for clean air, environmental justice, and a transition away from incineration to “zero waste,” and the creation of [five to 10 times](#) as many jobs through the practices of reuse, recycling, and composting. Since June 2017, the Baltimore City Council has passed seven unanimous [resolutions](#) backing these goals, urging the mayor and city agencies in this direction. In February 2019, they unanimously passed the [Baltimore Clean Air Act](#). If not for a bad lower court [ruling](#), that law would have taken effect this month, forcing the closure of Wheelabrator’s trash incinerator as well as [Curtis Bay Medical Waste Services](#), the nation’s largest medical

waste incinerator. Neither incinerator is needed as we have adequate non-burn alternatives already in place in the city.

The city's [contract](#) to burn waste at Wheelabrator ends the last day of 2021. It's worrisome that, in the last ten weeks of Mayor Bernard "Jack" Young's administration, there's [talk](#) about signing a new contract early to keep burning Baltimore's trash for an additional five to 10 years, binding the hands of the next mayor.

Contrary to incinerator industry public relations, trash incinerators do not turn waste into energy. Wheelabrator burns up to [2,250 tons](#) of trash a day from the [city, six other counties, and six other states](#) as far as Georgia. For every 100 tons they burn, [28 tons](#) come out as toxic ash dumped in the city and county's landfills, according to an analysis by Energy Justice Network. The other 72 tons become air pollution. None of it magically turns into good things.

Incinerators create new toxic chemicals in the process of burning and expose many more people through air pollution, plus fine ash that blows off of trucks and the landfill. Incinerators are far [worse](#) than using landfills directly, with greater emissions of greenhouse gases, nitrogen oxides, particulate matter, toxic chemicals and acid gases. With incineration, after putting most of the waste into our air, you end up with smaller, but more toxic landfills. What's dangerous about landfills is not their size, but their toxicity.

Wheelabrator Baltimore is 35 years old. The average lifetime of the 44 trash incinerators that have closed since 2000 is just [23 years](#), according to an analysis by Energy Justice Network. Only one incinerator in the nation has made it past 40 years old, and that Wheelabrator incinerator near Boston is experiencing major noise problems impacting the community. Connecticut recently [announced](#) that they'll close their largest incinerator because its breaking down and would cost over \$300 million to refurbish.

Expecting Wheelabrator to last another five to 10 years under a new contract is unrealistic and risks the city being on the hook for major costly repairs. Zero waste alternatives are realistic. There's a landfill at the end of the pipe in any scenario. Rather than burn to reduce waste in landfills, zero waste solutions can reduce waste just as much, while creating more jobs and less pollution. The city's been working for over six years to permit an expansion of their publicly-owned Quarantine Road Landfill. Once expanded, there will be room for the city's (unburned) trash until around 2040, so long as the waste reduction recommendations in the city's new solid waste master plan are followed.

We have two choices. Settle the Baltimore Clean Air Act appeal, forfeiting the right of all local governments in Maryland to have local clean air laws, and cut a deal to keep burning waste, with the city taxpayers on the hook for \$95 million in air pollution upgrades that will still leave Wheelabrator as the city's No. 1 air polluter. Or let this aging incinerator close already, defend the Baltimore Clean Air Act, and get serious about waste reduction so we can preserve our landfill space.

Mike Ewall (mike@energyjustice.net) is executive director of Energy Justice Network, a nonprofit organization working to transition communities from incineration to Zero Waste.

Air Pollution from Wheelabrator Baltimore (BRESKO) trash incinerator

Air Pollutant (and rank within the city)	Annual emissions (2014 EPA data in pounds)	Annual emissions (2017 EPA data in pounds)	Health Effects
#1 in Nitrogen Oxides	2,151,526	2,202,482	triggers asthma attacks, increases lifetime risk of chronic respiratory disease and stroke
#1 in Sulfur Dioxide	621,703	616,154	triggers asthma attacks, increases lifetime risk of chronic respiratory and heart diseases and stroke
#1 in Hydrochloric Acid	147,404	156,805	irritates eyes, skin, and nose, damages lungs
#1 in Carbon Monoxide	131,905	149,817	causes headaches and dizziness; increases lifetime risk of heart disease
#3 in Particulate matter (soot)	49,801	57,999	heart attacks, stroke, irregular heartbeat, aggravated asthma, decreased lung function, difficulty breathing
#3 in Fine Particulate matter	46,174	54,521	same as above, but worse, as it can get deep into lungs and into blood stream
#27 in Volatile Organic Compounds	6,600	5,398	eye, nose and throat irritation, headaches, loss of coordination and nausea, liver, kidney and central nervous system damage, cancer
#1 in Formaldehyde	3,966	4,022	irritates eyes, skin, and nose, increases lifetime risk of cancer
#1 in Hydrogen Fluoride	482	1,019	lung, liver, and kidney damage, skeletal fluorosis (brittle bones)
#1 in Lead	294	247	causes damage to nervous system and kidneys, lowers IQ in children, increases likelihood of antisocial behavior
#1 in Mercury	53	29	causes damage to nervous, digestive, and immune systems, lowers IQ in children
#1 in Nickel	17	92	lung and nasal cancers
#1 in Chromium (VI)	4	2	lung cancer, shortness of breath, coughing, and wheezing

And from a climate change perspective, Wheelabrator is **#1 in greenhouse gas** emissions, releasing 762,683 tons of CO2 equivalents in 2017, according to EPA. This is more than three times as bad as the second worst source, the city's Quarantine Road Landfill!

Lest these mercury and lead numbers sounds low, recognize that there is no safe dose of these toxic metals. Lead emissions from Wheelabrator have totaled around 10,000 pounds since the plant started in 1985. This is a shocking amount of lead pollution!

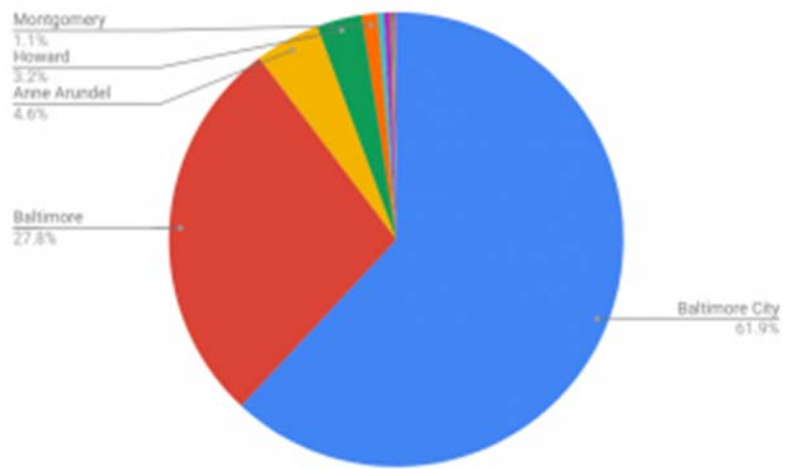
To put the mercury numbers in perspective, Wheelabrator reported releasing between 29 and 639 pounds of mercury per year since 2001, with an average of 114 pounds per year, or 72 pounds if you drop the whopping 639 pound figure from 2001 and leave their high point at 244 pounds in 2006. Mercury is one of the toxic pollutants for which there is [no known safe level](#) of exposure. This isn't not counting mercury which gets into the air and water via the ash dumped in the city, which [blows off of Quarantine Road Landfill](#) when used as cover material. A highly cited Minnesota [study](#) found that if approximately one gram of mercury (the amount in a single fever thermometer) is deposited to a 20-acre lake each year from the atmosphere, this small amount, over time, can contaminate the fish in that lake to the point where they should not be eaten. 72 pounds is 32,659 grams. That means the incinerator, in a typical year, is releasing enough mercury sufficient to keep over 32,000 20-acre lakes so contaminated that the fish are not safe to eat. How much is this impacting the Chesapeake Bay?

Where the Waste Comes From

Based on data reported to the Maryland Department of the Environment, this is where trash burned at the Wheelabrator Baltimore incinerator came from in 2019.

188,785 tons of ash was generated and disposed of in 2019, which means that for every 100 tons burned, 28 tons of ash remain to be landfilled. The rest becomes air pollution. Of the ash, 69% was buried in the city's Quarantine Road Landfill, and the rest in Baltimore County's Eastern Sanitary Landfill in White Marsh.

Source (City/County/State)	Tons (2019)	%
Baltimore City	422,049	62%
Baltimore County	189,213	28%
Anne Arundel	31,675	5%
Howard	21,773	3%
Montgomery	7,637	1%
St. Mary's	3,181	0%
Prince George's	3,159	0%
NC	1,168	0%
NJ	822	0%
WV	621	0%
OH	123	0%
PA	11	0%
GA	9	0%
Total	681,441	100%



CITY OF BALTIMORE
COUNCIL BILL 20-0243R
(Resolution)

Introduced by: Councilmembers Reisinger, Clarke, Burnett, Henry, Middleton, Pinkett, Sneed,
Cohen

Introduced and adopted: August 17, 2020

A COUNCIL RESOLUTION CONCERNING

Defending the Baltimore Clean Air Act

1
2 FOR the purpose of requesting that the Mayor’s Office and the Law Department drop all
3 settlement negotiations and rigorously and zealously defend the Baltimore Clean Air Act in
4 the City’s appeal before the Fourth Circuit; and requesting further that the Mayor’s Office not
5 consider any new contract that calls for incinerating the City’s trash and that the Mayor’s
6 Office enter into a good-faith dialogue with Zero Waste advocates to reaffirm the path
7 forward outlined in Baltimore’s Fair Development Plan for Zero Waste that does not rely on
8 incinerating City waste after 2021.

Recitals

9
10 The Baltimore Clean Air Act was enacted by the Mayor and City Council on March 7, 2019.
11 The Baltimore Clean Air Act requires that, starting in September 2020, the 2 large waste
12 incinerators in the City use modern technology to monitor and disclose their air pollution and that
13 these incinerators meet modern requirements for controlling 4 major air pollutants.

14 One of the waste incinerators in question is the Wheelabrator Baltimore trash incinerator,
15 which burns up to 2,250 tons per day of trash from the City, 6 Maryland counties, and 7 other
16 states. The other waste incinerator is Curtis Bay Energy, the nation’s largest medical waste
17 incinerator, which accepts medical waste from 20 states, the District of Columbia, and Canada.

18 Wheelabrator is the City’s largest air polluter. According to the U.S. Environmental
19 Protection Agency, Wheelabrator is responsible for 43% of the greenhouse gases emitted by
20 industry in the City and 38% of the health-damaging industrial air pollution, including being the
21 largest emitter of arsenic, cadmium, carbon monoxide, chromium (IV), hydrochloric acid,
22 hydrofluoric acid, lead, mercury, nitrogen oxides, and sulfur dioxide.

23 Curtis Bay Energy is one of 3 medical waste processors in the City and it is the only to use
24 incineration. In 1988, there were 6,200 medical waste incinerators in the U.S. Today, there are
25 approximately 20, 2 of which are the units at Curtis Bay Energy. Most of the country has closed
26 down their medical waste incinerators, including 23 at hospitals in the City of Baltimore. Safer,
27 non-burn alternatives are widely used now. The 2 facilities in the City that process medical
28 waste by using autoclaving have enough capacity to handle the volume of waste burned at Curtis
29 Bay Energy. Curtis Bay Energy has a history of emissions violations and has been under
30 investigation by the Environmental Crimes Unit of the Maryland Office of Attorney General this
31 year.

EXPLANATION: Underlining indicates matter added by amendment.
~~Strike out~~ indicates matter deleted by amendment.

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1 The Baltimore Clean Air Act was adopted with support from the Baltimore City Department
2 of Health, and a coalition of 36 public health, environmental, labor, and community
3 organizations, out of concern for public health. A study of just one of the many pollutants (fine
4 particulate matter) released by Wheelabrator found that it causes an estimated \$55 million in
5 annual health damage throughout several states, primarily by cutting people's lives short. Fine
6 particulate matter is exacerbating deaths from COVID-19, which are disproportionately
7 impacting black residents of Maryland.

8 The City's effort to rein in incinerator pollution was challenged in a court case initiated on
9 April 30, 2019 by Wheelabrator, Curtis Bay Energy, and 2 industry trade associations. This case,
10 *Wheelabrator Baltimore, L.P. et al v. Mayor and City Council of Baltimore*, was decided on
11 March 27, 2020.

12 In a 24-page decision, the Court upheld over half of the City's legal arguments, and
13 dismissed the incinerator companies' claims that they were unfairly targeted. However, the
14 Court struck down the Baltimore Clean Air Act entirely on the basis that the stricter requirements
15 conflict with state law.

16 The City Council agrees with the Law Department's January 24, 2019 advice letter to the
17 City Council, which described Wheelabrator's legal arguments as "demonstratively false."
18 Attorneys for the City put forth a strong case, and the City should pursue its appeal to overturn
19 the District Court's opinion. Federal and state law still clearly authorize local governments to
20 have clean air laws stricter than the state and federal minimums. The rights of the City and of all
21 county and municipal governments in Maryland are at stake, if the District Court opinion is not
22 overturned.

23 As Baltimore's legislative body, the City Council is charged with setting policy for the City.
24 Over the past 4 years, the City Council has made its views clear through the unanimous passage
25 of the Baltimore Clean Air Act and several resolutions. These resolutions include Council Bills
26 17-0022R {"Moving Baltimore to Zero Waste"}, 17-0029R {"Supporting the Paris Accord"},
27 17-0034R {"Set a Strong Nitrogen Oxides Limit for the Wheelabrator Baltimore Incinerator"}
28 (this resolution requested the State impose the same limit later codified in the Baltimore Clean
29 Air Act), 18-0086R (condemning the biased Solid Waste Management Master Plan study and
30 setting the Zero Waste Hierarchy as guiding City policy), and 20-0207R (requesting that the Law
31 Department appeal the decision of the District Court in the Clean Air Act case).

32 In addition to these measures, on April 6, 2020, the Council adopted Council Bill
33 20-0202R that called for the Mayor and all affected City agencies to begin implementation of
34 Baltimore's Fair Development Plan for Zero Waste: 2020-2040 and Beyond. City Council called
35 upon the Mayor and Public Works Director to work with the Plan's stakeholders to review and
36 undertake the following Plan priorities in achieving this 90% Zero Waste goal:

- 37 1. Defend and enforce the Clean Air Act in Baltimore City, which holds polluting
38 incinerators to higher standards than current and inadequate State and federal regulations.
- 39 2. Terminate the City's contract with BRESKO in 2021, thus allowing materials to be
40 reclaimed using phasing-in Zero Waste infrastructure.
- 41 3. Implement a Zero Waste "bridge strategy" including:

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- 1 • expanded collections, increased processing capacity – and transfer capacity (if
2 needed), including transfers outside of Baltimore, for example, possibly with
3 Baltimore County;
 - 4 • expanded recycling and composting programs, including free recycling and
5 composting carts to all City households, recycling for all households, along with
6 education and outreach materials on a consistent basis;
 - 7 • collection contracts with existing Baltimore-based organics collection providers to
8 support these City-based enterprises; and
 - 9 • community scale composting sites within the City and transfer of remaining
10 organics to recycling facilities outside Baltimore if needed.
- 11 4. Issue Requests for Proposals to attract mission-based or worker-owned recycling and
12 composting operators capable of meeting Baltimore's need for expanded collections into
13 recycling for all and curbside compost collections, including provisions for:
- 14 • contracts for lengthy terms to ensure consistency; and, local hiring, living wages,
15 benefits, and career pathway requirements to promote local career opportunities;
16 and
 - 17 • preference for local markets, recovery of quality materials; requiring that
18 contractors report on the composition of material, the amount of residual, and the
19 destination of sold material; and performance-based contracting incentives.

20 Despite setting forth these detailed policy goals, the City Council has recently learned that the
21 Law Department is engaged in settlement negotiations with Wheelabrator pertaining to
22 “long-term solid waste management, air quality standards, and financial issues,” as described in a
23 July 14, 2020 court filing and subsequent reporting.

24 For the following reasons, the City Council does not support negotiating with Wheelabrator
25 for extended use of incineration, or any sort of settlement in lieu of aggressive legal defense of
26 the Baltimore Clean Air Act:

- 27 • Failing to overturn the District Court opinion means that Baltimore City and all local
28 governments in Maryland will lose their right to adopt local clean air laws;
- 29 • Making any deal for continued use of incineration beyond 2021 contradicts the City
30 Council’s clear intent to move the City from incineration to Zero Waste and binds the
31 hands of future administrations;
- 32 • No deal that involves new contracts for the City to burn trash at Wheelabrator makes any
33 financial, health, or environmental sense; and
- 34 • Wheelabrator would still be the City’s largest air polluter even if they were to meet the
35 significant pollution reduction requirements of the Baltimore Clean Air Act.

36 Indeed, Geosyntec’s April 15, 2020 “Solid Waste Management Master Plan” report for the
37 Baltimore City Department of Public Works states that Wheelabrator’s compliance with the

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1 Baltimore Clean Air Act would cost \$95 million. The report recommends that City taxpayers
2 would foot the bill for bringing Wheelabrator’s trash incinerator up to modern standards and that
3 a new 5-year contract to cover these costs would amount to an increase of approximately 50%
4 over current disposal fees. The report also suggests new incineration contracts for 10 or 20 more
5 years of burning City trash.

6 Wheelabrator Baltimore is 35 years old. The average lifetime of the 29 trash incinerators that
7 have closed since 2000 is just 22 years old. Only one incinerator in the nation has been in
8 operation for more than 40 years without having to be completely rebuilt, and that particular
9 Wheelabrator incinerator near Boston is experiencing major noise problems impacting the
10 community. One other incinerator has lasted past 40 only after being rebuilt in 2006 and has
11 bankrupted Pennsylvania’s capital city in the process. Just this month, Connecticut announced
12 that it will be closing its largest incinerator because its aging state-run incinerator in Hartford is
13 breaking down and would cost over \$300 million to refurbish.

14 The City Council believes that it is unreasonable to invest \$95 million in taxpayer money in
15 an incinerator at the end of its life or to accept the risk of increasing operation and maintenance
16 cost as the plant breaks down over the term of any new 5, 10, or 20-year contract.

17 With 36% of Wheelabrator's trash coming from outside the City, they will need to stay
18 competitive and offer cheaper tipping fees to suburban areas to attract enough waste to stay at
19 capacity. It's an unfair environmental injustice for City taxpayers to subsidize cheaper dumping
20 for the suburbs.

21 For Wheelabrator to agree to invest \$95 million in new pollution monitoring and controls,
22 any new contract would likely include a “put-or-pay” clause that guarantees that the City sends a
23 minimum amount of waste to Wheelabrator or pay regardless. This clause is the basis for the
24 current \$32 million lawsuit Wheelabrator filed against Baltimore County for not providing
25 enough trash. Any guarantee of waste or money to Wheelabrator would undermine the City’s
26 Zero Waste efforts, penalizing the City for making less trash for as long as this type of
27 incineration contract is extended.

28 In Connecticut’s recent decision to close their incinerator, they chose to move forward on a
29 Zero Waste path centered on unit pricing, recycling, composting, and other Zero Waste solutions.
30 Baltimore can and should do the same. Doing so would cost much less, create more jobs, and
31 prevent health and environmental damage.

32 **NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF BALTIMORE,** That the
33 Council requests that the Mayor’s Office and the Law Department drop all settlement
34 negotiations and rigorously and zealously defend the Baltimore Clean Air Act in the City’s
35 appeal before the Fourth Circuit.

36 **AND BE IT FURTHER RESOLVED,** That the Council requests the Mayor’s Office not consider
37 any new contract that calls for incinerating the City’s trash and that the Mayor’s Office enter into
38 a good-faith dialogue with Zero Waste advocates to reaffirm the path forward outlined in
39 Baltimore’s Fair Development Plan for Zero Waste that does not rely on incinerating City waste
40 after 2021.

41 **AND BE IT FURTHER RESOLVED,** That a copy of this Resolution be sent to Mayor, the Acting
42 City Solicitor, the Acting Director of Public Works, the Baltimore City Health Commissioner,

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1 the Office of Sustainability's Sustainability Coordinator, and the Mayor's Legislative Liaison to
2 the City Council.



Landfills are bad, but incinerators (with ash landfilling) are worse

Incinerators do not avoid landfills. For every 100 tons of trash burned, 30 tons become toxic ash that goes to landfills. The other 70 tons don't turn into energy, but become air pollution. In terms of air pollution, and groundwater impacts, burning waste then burying ash is far worse than direct landfilling, and both are worse than a Zero Waste approach.¹

A Zero Waste approach means zero incineration and at least 90% reduction from landfilling, with residuals biologically stabilized prior to landfilling, to minimize odors, leachate, gas formation and toxic migration.

The most recent data comparing incinerators to landfills is from air emissions data provided by the Pennsylvania Department of Environmental Protection (DEP). For 2017, this includes data on all six trash incinerators in PA and 17 landfills in DEP's southeast and southcentral regions.

Pollutant (all data in tons)	Incinerators	Landfills	Incinerators are __ times as polluting
<u>Greenhouse Gases (CO₂e)</u>	482,770	268,763	<u>1.8</u>
<u>Total Health Damaging Pollution</u>	1,975	1,236	<u>1.6</u>
Carbon Monoxide (CO)	119	22	5
Hydrochloric Acid (HCl)	17	1	21
Nitrogen Oxides (NOx)	625	6	105
Particulate Matter, Condensable	25	1	17
Particulate Matter (PM10)	26	17	1.6
Fine Particulate Matter (PM2.5)	17	4	5
Sulfur Oxides (SOx)	55	3	19
Total Suspended Particulate (TSP)	2,178	2,486	0.88
Volatile Organic Compounds (VOC)	3	9	0.34

This shows that incineration is 80% worse than landfills for the climate, and that other pollutants that directly harm human health are 60% worse from incineration. Emissions of nitrogen oxides that trigger asthma attacks are 105 times as bad as landfills.

Only two pollutants for which there was complete data showed landfills to be worse: VOCs, and TSP. However the TSP average for landfills is higher only because of one facility (Fairless Landfill) that had an unusually high number. Without that data point, the average of the other landfills is just 536 tons, which means that incineration is 4 times as polluting as these other landfills, on average. The volume accepted at the landfills is about the same (just 1.6% more) than the incinerators, so this pollution difference is not a function of the amount of waste received.

A more rigorous life cycle analysis of incineration vs. landfilling was commissioned in 2017 to look at Washington, DC's waste options. It looked at DC trucking waste to the Covanta Fairfax incinerator vs. four landfills in southeastern Virginia, one of which requires trucking waste twice as far; the other three involve trucking waste four times as far. It was analyzed on the basis of pollution impacts per ton of waste disposed.

¹ See www.zwia.org/standards/zw-definition/ and www.zwia.org/zwh or www.energyjustice.net/zerowaste/hierarchy

It found that trucking emissions were insignificant compared to the emissions of the incinerators and landfills themselves. It concluded that incineration is worse than landfilling for global warming, smog, toxic emissions, acid gas emissions, nitrogen oxide emissions, and particulate matter, even when trucking waste four times as far to landfills. On one measure, eutrophication, they were basically tied. On three of the smallest measures, landfills showed to be worse. On balance, incineration was far worse than landfilling. Because it couldn't easily be quantified, dioxin emissions (the most toxic chemicals known to science, largely emitted by incinerators) and toxic leaching from incinerator ash were not accounted for. Could they be quantified, this would weigh even more heavily against incinerators.²

Why are incinerators worse?

On toxic emissions, nitrogen oxides, smog, acid gases, and particulate matter emissions, it's rather obvious. Incinerators turn 70% of the tonnage into air emissions, only some of which can be captured or reduced through air pollution control devices. Most of this is not generated at landfills because they're products of combustion. The sheer volume of material being emitted through the smokestack leads to this outcome.

Regarding toxicity, incineration is worse than landfilling for two reasons:

- 1) Highly-toxic new chemicals like dioxins/furans, and polycyclic aromatic hydrocarbons (PAHs) are formed in the combustion process and end up in the air and ash.
- 2) Toxic materials already present in products, such as toxic metals in inks or electronics, are largely trapped in the product and stay stored in the landfill long-term. When burned, those toxic metals are immediately freed and released in a form that is more available for people to eventually breathe or drink. What does not end up ejected into the air becomes part of the ash. Ash can be kicked up and blow into communities during shipping, when placed on landfills as landfill cover, and where "recycled" to make internal roads in landfills. In terms of leachate, think of coffee beans vs. coffee grounds. Pour water over beans and you won't get coffee, but grind them up and increase their surface area, pour water over them, and you get coffee. Ash is similar in that its higher surface area means more toxic chemicals can leach out, polluting groundwater.

What about methane and global warming?

Landfills *are* bad for global warming, as they emit large amounts of landfill gas as organics like food scraps and yard waste rapidly degrade. Landfill gas is about half carbon dioxide and half methane. Methane was long thought to be just about 20-some times as bad as CO₂ for the climate, but is now understood to be 34 times as bad over a 100-year time span, and a whopping 86 times as bad over a 20-year horizon, which is more relevant for avoiding global warming tipping points. Even using the latest science on methane and a 20-year time horizon, the 2017 life-cycle analysis found that trucking waste four times as far to a landfill is still not as bad for the climate as burning closer to home.

According to EPA, about half (47.3%) of the carbon in municipal solid waste is from plastics and tires.³ In a landfill, this carbon is sequestered, but when burned, it's immediately injected into the atmosphere. No carbon capture and sequestration is viable or used on trash incinerators. Carbon in more durable materials like wood, leather, and textiles in a landfill largely is sequestered as well, but would be emitted immediately

² http://www.energyjustice.net/files/md/montgomery/incineration_vs_landfills.pdf See slides 26-59; study conclusions are on slides 38-48. Note that the difference between the red and blue lines are between doubling the trucking distance and quadrupling the trucking distance. If trucking emissions were significant, there would be a larger difference between these lines.

³ U.S. EPA Emissions & Generation Resource Integrated Database (eGRID) 2012 Technical Support Document, Table 3-2.

as CO₂ if burned.⁴ It's primarily the food scraps and yard waste that degrade rapidly in a landfill, forming landfill gas. Most of that gas is captured and reduced to CO₂ when burned. Some of the methane that leaks out, uncaptured, oxidizes to CO₂, anyway. All told, even with the high potency of methane, overall climate impacts from incineration are worse for the aforementioned reasons.

EPA's WARM Model and other flawed analyses

Greenhouse gas comparisons that make incineration out to be better than landfills (or coal) rely on some major flawed assumptions.⁵ About half of the CO₂ emissions from trash incineration are considered "biogenic" in that they come from burning food scraps, yard waste, wood, paper, and other products that were grown, as opposed to petroleum-based plastics that produce the other half. While it's been scientifically debunked repeatedly, some still embrace the "carbon neutrality" argument that counts those emissions as zero because new growing plants suck up the carbon.⁶ However, the decision to burn or bury has no impact on whether plants will regrow, and it's not valid to discount nearly half of an incinerator's GHG emissions while counting the GHG emissions from landfills, which are entirely "biogenic" (the plastics in landfills aren't forming GHGs). The sun's rays do not interview carbon molecules in the atmosphere, ask where they came from, and choose whether to not to heat them up. Carbon in a landfill or in a tree is not the same as carbon in the atmosphere. In debunking the biomass carbon neutrality myth, scientists have pointed out that it relies on a form of double-counting, as international carbon accounting protocols already account for tree and plant growth in their models, and for it to be subtracted or ignoring carbon emitted from biogenic carbon emitting sources is hiding the actual climate impacts.

EPA data shows that emissions of CO₂ from wood burning (biomass incineration) is 50% worse than coal, per unit of energy, and that trash incineration is 150% worse (2.5 as bad). A study commissioned by the Commonwealth of Massachusetts found that for wood burning ("biomass"), it takes 45 years on average for that extra pulse of CO₂ to be reabsorbed by newly growing trees. This is not carbon neutrality, but just getting back down to the level of coal burning. No carbon neutrality can be possible within a meaningful timeframe since we do not have decades to avert the worse global warming tipping points.

Another major flaw is subtracting emissions from coal power plants as if any energy generation at an incinerator displaces coal. This is increasingly not the case, especially where trash incinerators are selling Renewable Energy Credits to states that include incineration in their Renewable Portfolio Standard laws. In these cases, closing an incinerator does not mean more fossil fuels, but means that a utility must replace it with hydroelectric, wind, or other renewable energy resources.

Also, subtracting avoided methane emissions from landfills is a dishonest way to do a comparison between incinerators and landfills. Similarly, one would not do a comparison where the landfills can subtract incinerator emissions, or where coal power plant owners can plant enough trees and pretend that their actual stack emissions are negative.

If one is rightfully concerned about the greenhouse gas impacts in the waste system, then it's imperative that incineration is not used, and that readily degradable organics (food scraps and yard waste) are kept out of landfills.

⁴ Morris, Jeffrey, "Recycle, Bury, or Burn Wood Waste Biomass?: LCA Answer Depends on Carbon Accounting, Emissions Controls, Displaced Fuels, and Impact Costs," *Journal of Industrial Ecology*, August 2016. <https://doi.org/10.1111/jiec.12469>

⁵ <http://www.energyjustice.net/incineration/climate>

⁶ <http://www.energyjustice.net/biomass/climate>

Groundwater

There is no good data to do a comparison of groundwater damage from landfilling unburned trash vs. trash incinerator ash. However, some informed common sense goes a long way. It's not the size of landfills that is harmful, but their toxicity. As described above, incineration creates new toxic chemicals like dioxins/furans, depositing much of them in the ash, and makes existing toxic chemicals more readily available to blow away or leach into groundwater by increasing the surface area.

Ashes and Ash Testing

Two types of ash are produced when trash or other solid fuels are burned: bottom ash and fly ash. Bottom ash, which is what remains on the grate of the boiler, makes up about 90% of the ash. The remainder is "fly ash" – smaller particles that are caught in the air pollution controls. Fly ash is far more toxic and is impregnated with heavy metals and dioxins. Prior to 1994, when incinerator ash was tested with the EP Tox test, the fly ash tested hazardous 94% of the time and the bottom ash tested hazardous 36% of the time. In some other nations, and in two international treaties, incinerator ash is categorically defined as hazardous waste. Until 1994, the U.S. Environmental Protection Agency categorically exempted incinerator ash from hazardous waste regulation. In May 1994, the U.S. Supreme Court ruled that incinerator ash that tests hazardous for toxic heavy metals such as lead and cadmium must be disposed of in hazardous waste landfills rather than in typical municipal solid waste landfills. If incinerators were made to pay for the expense of disposing of their ash as hazardous waste, they'd be out of business overnight. In response to that ruling, EPA saved the industry by changing the test and permitting new practices that consistently avoid a hazardous waste designation. The TCLP test manipulates the pH so that the laboratory test occurs at a pH where lead does not leach out. The use of lime injection in air pollution scrubbers also helps manipulate the pH and EPA allows incinerators to mix the fly and bottom ashes so that the dilution and the injected lime helps the combined ash pass the test. Phosphoric acid can also be used to prevent leaching long enough to pass the test. In real-world, long-term environments, the toxic metals in ash leach out and can be expected to do more damage to groundwater than unburned trash, especially if organics and liquids are kept out of landfills to minimize leachate formation.

What SHOULD we do?

There are three major options for how to manage waste, all of which end in landfilling in some way:

- 1) Landfill directly
- 2) Incinerate and landfill toxic ash
- 3) Zero waste with material recovery and biological treatment prior to stabilized landfilling

Studies comparing landfilling and incineration to zero waste approaches have found – not surprisingly – that avoided production (reduction and reuse), recycling and composting are better for the climate than burning or burying materials,⁷ and that the "leftovers" are best handled with a material recovery and biological treatment (MRBT) process before landfilling.⁸ Material recovery means mechanically removing extra recyclables that are still discarded. Biological treatment means stabilizing any residual organic material with an anaerobic digestion process so that any gas generation is done in an enclosed system where gases can be easily captured, avoiding having a gassy, stinky landfill. Following the Zero Waste Hierarchy provides the best results.⁹

⁷ <http://www.eunomia.co.uk/reports-tools/the-potential-contribution-of-waste-management-to-a-low-carbon-economy/>

⁸ <http://www.ecocycle.org/specialreports/leftovers>

⁹ <http://zwia.org/standards/zero-waste-hierarchy/>

Trash incineration & Community Health

What the studies say...

By Mike Ewall, Energy Justice Network, 215-436-9511, mike@energyjustice.net; www.energyjustice.net/incineration

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.cleanairbaltimore.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.cleanairbaltimore.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