April 3, 2023

[By mail and email]

Administrator Michael Regan
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: Petition for Rulemaking Pursuant to the Administrative Procedure Act and the Emergency Planning and Community Right-to-Know Act, Requiring that Waste Incinerators Report to the Toxics Release Inventory

Dear Administrator Regan:

Please accept the attached petition for issuance of a rule to add Large and Small Municipal Waste Combustors, Hospital/Medical/Infectious Waste Incinerators, Sewage Sludge Incineration Units, Commercial and Industrial Solid Waste Incineration Units, Other Solid Waste Incinerators, and Pyrolysis and Gasification Units to the Toxics Release Inventory. This petition is made pursuant to the Administrative Procedure Act, 5 U.S.C. § 553(e), the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. § 11023(b)(1)(B), and 40 CFR § 372.23.

Thank you for your consideration of this petition.

Michael Ewall, Esq.
Executive Director
Energy Justice Network
1434 Elbridge St
Philadelphia, PA 19149
Phone: 215-436-9511
E-mail: mike@energyjustice.net

Timothy Whitehouse
Executive Director
Public Employees for Environmental Responsibility (PEER)
962 Wayne Ave, Suite 610
Silver Spring, MD 20910
Phone: 202-265-7337
E-mail: twhitehouse@peer.org

Contents

1. INTRODUCTION 3

2. PETITIONERS HAVE THE RIGHT TO PETITION FOR THIS RULEMAKING 8

3. REQUESTED ACTION 8

4. OVERVIEW OF TRI AND WASTE INCINERATORS 10

A. TRI Tracks the Release of Toxic Chemicals into the Environment 10

B. Waste Incinerators Release Toxic Chemicals Covered by the TRI 13

C. Waste Incinerators Harm Human Health 16

5. WASTE INCINERATORS SATISFY THE EPA'S MULTIFACTOR TEST 19

A. Waste Incinerators Meet the Chemical and Activity Factors 20

i. Air releases (chemical factor) 23

ii. Land Disposal (chemical factor) 26

B. Waste Incinerators Meet the Information Factor 30

i. NEI Data and EPA Research Demonstrate a Significant Number of Waste Incinerators Will Meet the TRI Reporting Threshold 31

ii. Canadian Data Also Supports Waste Incinerators' Satisfaction of the Information Factor 36

C. The TRI Fills Data Gaps on Toxic Releases 39

6. EPA'S ENVIRONMENTAL JUSTICE MANDATES SUPPORT THIS PETITION 43

A. EPA's Duty to Promote Environmental Justice 43

B. Environmental Justice Mandates Trash Incinerators' Inclusion under TRI 45

C. Missing Toxic Release Data Has a Disproportionate Impact on Low-Income and Minority Communities 45

7. CONCLUSION 47

1. INTRODUCTION

This petition requests that the U.S. Environmental Protection Agency (EPA) conduct a rulemaking in accordance with the Emergency Planning and Community Right-to-Know Act (EPCRA) section 313 to require Waste Incinerators regulated under Section 129 of the Clean Air Act to report their toxic releases under EPCRA's Toxic Release Inventory (TRI). In this petition, we define "Waste Incinerators" to include:

- Large and Small Municipal Waste Combustors (MWC, or "trash incinerators"),
- Hospital, Medical, and Infectious Waste Incinerators (HMIWI, or "medical waste incinerators"),
- Sewage Sludge Incineration Units (SSI),
- Commercial and Industrial Solid Waste Incineration Units (CISWI),
- Other Solid Waste Incinerators (OSWI), and
- Pyrolysis and Gasification Units (P&G).

The TRI currently tracks the management of 787 individual toxic chemicals and 33 chemical categories that may pose a threat to human health and the environment.[1] Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual reports to the EPA with the amount of each chemical released to the

[1] U.S. Environmental Protection Agency (EPA), TRI-Listed Chemicals, www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals (last visited Dec. 9, 2022); *see also* EPA, What is the Toxics Release Inventory?, www.epa.gov/toxics-release-inventory-tri-program/what-toxics-release-inventory (last visited Dec. 9, 2022) (noting only 770 individually-listed chemicals, likely prior to the addition of new PFAS chemicals).

environment and/or managed through recycling, energy recovery and treatment.[2] These disclosures are published in the inventory and are accessible to the public online.[3]

The purpose of TRI is to provide the public with information about releases of toxic chemicals into their environment, assist government agencies, researchers, and other persons in the conduct of research and data gathering, and to aid in the development of appropriate regulations, guidelines, and standards.[4]

If EPA grants this petition and completes rulemaking, all Waste Incinerators that meet the TRI's annual reporting requirements would be required to report their chemical releases to the TRI. Municipal waste combustors burn a range of household and commercial solid wastes, medical wastes, sewage sludge, tires, solid and liquid industrial wastes, landfill leachate, pharmaceuticals, construction and demolition (C&D) wastes,[5] and treated and untreated medical wastes.[6] Medical Waste Incinerators burn wastes produced by hospitals, veterinary facilities, and medical research facilities, including infectious ("red bag") medical wastes as well as non-infectious, general housekeeping wastes, and can include chemotherapeutic wastes, pharmaceutical wastes, pathological wastes, sharps, and radioactive isotopes.[7] Sewage sludge incinerators primarily burn sewage sludge, but some are importing a wide range of liquid wastes,

[2] EPA, What is the Toxics Release Inventory?, www.epa.gov/toxics-release-inventory-tri-program/what-toxics-release-inventory (last visited Dec. 9, 2022)
[3] *Id.*; *see also* EPA, TRI Data and Tools, www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools (last visited Dec. 9, 2022) (providing numerous online tools reporting TRI data).
[4] EPA, Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834, 23,836 (May 1, 1997) (to be codified at 40 C.F.R. pt. 372), www.govinfo.gov/content/pkg/FR-1997-05-01/pdf/97-11154.pdf. (quoting EPCRA section 313(h)).
[5] Energy Justice Network, "Hazards of Construction and Demolition Waste Incineration," www.energyjustice.net/incineration/cd.pdf
[6] Covanta Lake (FL), Covanta Marion (OR), Covanta Huntsville (AL) burn untreated medical waste, and Covanta Niagara (and likely others) burn treated medical waste.
[7] EPA, Medical Waste, www.epa.gov/rcra/medical-waste (last visited Feb. 22, 2023).

including from hydraulic fracturing ("fracking") operations.[8] CISWI, OSWI, and P&G facilities burn a wide range of waste types.

There are currently 68 facilities that qualify as Large or Small Municipal Waste Combustors (MWC),[9] an estimated 15-30 facilities with Hospital, Medical, and Infectious Waste Incinerators (HMIWI), an estimated 60-70 Sewage Sludge Incineration (SSI) facilities, 148 Commercial and Industrial Solid Waste Incineration Units (CISWI),[10] 63 Other Solid Waste Incinerators (OSWI),[11] and as many as 40 Pyrolysis and Gasification (P&G) facilities (counting several that are still just proposed and some others that are now closed).[12]

Waste Incinerators are significant contributors to toxic releases of TRI-listed chemicals, including heavy metals such as lead and mercury and toxic chemicals such as dioxins and per- and polyfluoroalkyl substances (PFAS) released into the air, water, or land. Waste Incinerators burn chlorinated products such as PVC plastics that contribute to emissions of dioxins/furans and hydrochloric acid. They burn fluorescent bulbs and other mercury-containing devices. Cadmium, lead, and other toxic metals are present in inks, electronic devices, cosmetics, and as stabilizers in discarded plastics. Sewage sludge burned in some municipal waste combustors contains a wide range of toxic chemicals, which can, in part, be evidenced by discharges to publicly-owned

[8] For example, Delaware County Regional Authority (DELCORA)'s Western Regional Treatment Plant in Chester City, Pennsylvania and Passaic Valley Sewerage Commission (PVSC) in Newark, NJ are among the larger importers of liquid industrial wastes.

[9] Energy Justice Network, Commercial Trash Incinerators in the U.S., www.energyjustice.net/incineration/usplants (listing currently operating commercial trash incinerators in the U.S.) (last visited Dec. 9, 2022) [Commercial Trash Incinerators in the U.S.]; *see also* EPA, Map of Commercial Waste Combustors in the U.S., www.epa.gov/hwgenerators/map-commercial-waste-combustors-us (last visited Dec. 9, 2022).

[10] *See generally* U.S. Environmental Protection Agency, "Enforcement and Compliance History Online," echo.epa.gov (providing a centralized database that tracks waste incineration units under various NAICS codes).

[11] *Id.*

[12] EPA, Potential Future Regulation Addressing Pyrolysis and Gasification Units, 86 Fed. Reg. 50,296, 50,302 (Sept. 8, 2021), www.govinfo.gov/content/pkg/FR-2021-09-08/pdf/2021-19390.pdf (listing forty units in Table 3).

treatment works as reported to the TRI database. Toxic metals burned in incinerators cannot be destroyed, but end up discharged in the air and ash. Halogenated chemicals end up released as acid gases, dioxins/furans, and other toxic chemicals, some of which end up concentrated in ash.

The EPA Administrator has the authority to add new industries, such as Waste Incinerators, to the TRI. When deciding whether to add a new industry (referred to as "candidate industry") to the TRI, EPA considers the following three primary factors:

1. whether one or more toxic chemicals are reasonably anticipated to be present at facilities within the candidate industry group;
2. whether facilities within the candidate industry group "manufacture," "process," or "otherwise use" these toxic chemicals. EPA has defined "otherwise use" to include treatment for destruction, disposal and waste stabilization for purposes of further waste management; and,
3. whether facilities within the candidate industry group can reasonably be anticipated to increase the information made available pursuant to EPCRA section 313, or otherwise further the purposes of EPCRA section 313.[13]

Because the industry readily meets these three factors, EPA should require Waste Incinerators to report their toxic releases to the TRI. The first factor is met because industry burns and releases large quantities of TRI-listed toxic chemicals. The second factor is met because Waste Incinerators meet the definition of "otherwise use" because they incinerate and dispose of waste for purposes of waste management. The third factor is met because requiring

[13] 62 Fed. Reg. at 23,836.

Waste Incinerators to report to the TRI would increase the information on these releases available to the public and promote the purpose of EPCRA. No other regulatory system adequately provides communities with information on Waste Incinerators' toxic releases.

Strong environmental justice considerations also weigh in favor of granting this petition. As discussed in the final section of this petition, the trash, sewage sludge, and commercial medical waste incinerator industries have a disproportionate impact on environmental justice communities, particularly on Black residents of these United States. The other sectors may, as well, but we do not have a comprehensive analysis of them at this time.

EPA's National Emissions Inventory (NEI) shows that trash incinerators are either the largest, or among the top, air polluters in their counties for several TRI chemicals, including hydrochloric acid, hydrofluoric acid, sulfuric acid, ammonia, benzo[a]pyrene, formaldehyde, hexachlorobenzene, arsenic, cadmium, chromium (VI), lead, mercury, and nickel.[14] If dioxins and furans were required to be reported to the NEI, Waste Incinerators would also likely be among the top air emitters of these toxic compounds.

Adding Waste Incinerators to the TRI would further EPA's policy mandates to promote environmental justice by making this toxic pollution more visible to impacted communities, researchers, reporters, and decision-makers. The health burdens placed upon environmental justice communities by emissions of these chemicals can only exacerbate existing health disparities, and justify the reporting that would shed more light on these exposures.

[14]*See* EPA, 2017 National Emissions Inventory (NEI) data, www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data (last visited Feb. 22, 2023).

2. PETITIONERS HAVE THE RIGHT TO PETITION FOR THIS RULEMAKING

Public Employees for Environmental Responsibility (PEER) is an IRS 501(c)(3) non-profit organization incorporated under the laws of the District of Columbia and headquartered in Silver Spring, Maryland.

Action Center, Inc. (d.b.a. Energy Justice Network) is an IRS 501(c)(3) non-profit organization incorporated under the laws of Pennsylvania and headquartered in Philadelphia.

Under the APA, any "interested person" has the right to petition an agency for the "issuance, amendment, or repeal of a rule."[15] A "person," under the APA, means an individual, partnership, corporation, association, or public or private organization.[16] Therefore, under the APA, Petitioners are "persons" with standing to petition the EPA Administrator to initiate a proceeding for the promulgation of a rule requiring that Waste Incinerators be added to the reporting industries subject to TRI.

3. REQUESTED ACTION

PEER and Energy Justice Network ("Petitioners") petition EPA to amend 40 CFR § 372.23(a) and 40 CFR § 372.23(c) to extend TRI coverage to Large Municipal Waste Combustors, Small Municipal Waste Combustors, Hospital/Medical/Infectious Waste Incinerators, Sewage Sludge Incineration Units, Commercial and Industrial Solid Waste Incinerators, Other Solid Waste Incinerators, and Pyrolysis and Gasification Units regulated under Section 129 of the Clean Air Act (CAA), 42 U.S.C. § 7429.

[15] 5 U.S.C. § 553(e).
[16] 5 U.S.C. § 551(2).

Under SIC Code 4953 (Refuse Systems) and NAICS code 562213 (Solid Waste Combustors and Incinerators), TRI's coverage is currently limited to facilities regulated under the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6921 et seq, which are hazardous waste incinerators.

Specifically, petitioners propose that the EPA amend both subsections (a) and (c) to include both hazardous waste incinerators and the other waste incinerators regulated by CAA section 129. Thus, in addition to the language "Limited to facilities regulated under the Resource Conservation and Recovery Act, 42 U.S.C. 6921, et seq," that currently appears in both subsections, EPA should commence a rulemaking to add "and those regulated under Clean Air Act Section 129, 42 U.S.C. § 7429" immediately thereafter in sections (a) and (c).

While MWCs and SSIs have fairly consistent NAICS codes in EPA databases, the other incinerator types report a wide variety of NAICS codes. EPA should review all of the NAICS codes that apply to the variety of Waste Incinerators covered by this petition. To the extent that there are facilities that act as Waste Incinerators but are not self-identified under 562213, they should be added, including potentially NAICS codes: 325412 (Pharmaceutical Preparation Manufacturing); 54171 (Research and Development in the Physical, Engineering, and Life Sciences); 562219 (Other Nonhazardous Waste Treatment and Disposal); 611310 (Colleges, Universities, and Professional Schools); 621511 (Medical Laboratories); 622110 (General Medical and Surgical Hospitals); 622310 (Specialty (except Psychiatric and Substance Abuse)); 923120 (Administration of Public Health Programs); and 928110 (National Security). If comments on EPA's rulemaking reveals that any of these codes should be added to subsection (c) to adequately

cover waste incinerators in operation under different codes, subsection (a) should also be updated with the corresponding SIC codes.

4. OVERVIEW OF TRI AND WASTE INCINERATORS

A. TRI Tracks the Release of Toxic Chemicals into the Environment

In 1986, Congress passed the EPCRA to support and promote emergency planning and to provide the public with information about releases of toxic chemicals in their community.[17] Section 313 of EPCRA established the TRI.[18]

The TRI program currently covers 787 individually listed chemicals and 33 chemical categories.[19] In general, chemicals covered by the TRI program are those that cause: cancer or other chronic human health effects; significant adverse acute human health effects; or significant adverse environmental effects.[20]

At the heart of the TRI program is a requirement that certain industrial sectors file annual reports on the amounts of toxic chemicals released into the air or water, or disposed of in impoundments or landfills.[21] EPA publishes these reports online in several databases tailored to the general public and researchers.[22] TRI's annual reporting requirements apply to owners and operators of facilities that: (a) have ten or more full-time employees, (b) are a TRI-listed industrial sector, and (c) have manufactured, processed, or otherwise used one or more of the TRI-listed toxic chemicals in excess of the regulatory threshold quantity.[23]

---

[17] Note 2 *supra*.
[18] *Id.*
[19] EPA, TRI-Listed Chemicals, www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals (last visited Dec. 9, 2022).
[20] Note 2 *supra*.
[21] *Id.*
[22] *See* EPA, 2020 TRI National Analysis data dashboard, awsedap.epa.gov/public/extensions/TRINA_dashboard_2020/TRINA_dashboard_2020.html; *see also* EPA, TRI Data and Tools, www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools (last visited Dec. 9, 2022) (providing numerous online tools reporting TRI data).
[23] EPA, Formal Response to October 24, 2012, Petition to Add the Oil and Gas Extraction Industry, Standard Industrial Classification Code 13, to the List of Facilities Required to Report under Section 313 of the Emergency Planning and Community Right-to-Know Act 1 (October 22, 2015), www.epa.gov/sites/default/files/2015-10/documents/signed_eip_tri_petition_response_10.22.15.pdf. [hereinafter EPA 2015 Petition Response].

For each chemical above the threshold during the calendar year, the owner or operator of each industrial facility must complete a toxic chemical release form that includes the following information:

1. Whether the toxic chemical at the facility is manufactured, processed, or "otherwise used" and the general category or categories of use of the chemical.
2. An estimate of the maximum amounts (in ranges) of the toxic chemical present at the facility at any time during the calendar year.
3. Data about how they are managing chemical waste through environmental releases into the air, water, and land; recycling; energy recovery; treatment; and disposal.[24]

While EPA has many data collection programs, the TRI Program is different than these other programs because the data it collects are made more publicly accessible online, reflect chemical emissions to air, water and land, and encompass source reduction and other pollution prevention practices.[25]

EPCRA states that TRI disclosures "are intended to provide information to the Federal, State, and local governments and the public, including citizens of communities surrounding covered facilities."[26] As interpreted by EPA, the purpose of the TRI is to: "(1) Provid[e] a complete profile of toxic chemical releases and other waste management activities; (2) compil[e] a broad-based national database for determining the success of environmental regulations; and (3)

[24] *See generally*, EPA, Reporting for TRI Facilities, www.epa.gov/toxics-release-inventory-tri-program/reporting-tri-facilities (last visited Dec. 9, 2022).
[25] What is the Toxics Release Inventory, *supra* note 17.
[26] 42 U.S.C.A. § 11023(h).

ensur[e] that the public has easy access to these data on releases of toxic chemicals to the environment."[27]

The TRI's data transparency is meant to drive community-based policy. "By making information about industrial management of toxic chemicals available to the public," the EPA explains, "TRI creates a strong incentive for companies to improve environmental performance."[28] TRI reporting is an important transparency tool that is designed to inform communities experiencing routine or accidental chemical releases. One 2011 study of the law's impact found that "61 percent of public officials had used the TRI to locate local environmental releases or to work on a pollution problem in their geographic areas."[29] EPA has stated, "[w]ith EPCRA, and the real gains in understanding it has produced, communities now know what a subset of industrial facilities in their area release or otherwise manage as waste for listed toxic chemicals."[30]

EPA may add Waste Incinerators to the TRI. Congress provided EPA with authority to add new industry groups if "such action is warranted on the basis of toxicity of the toxic chemical, proximity to other facilities that release toxic chemicals or to population centers, the history of releases of such chemical at such facility, or other factors as appropriate."[31] Because of the high levels of TRI-listed toxic chemicals that Waste Incinerators release into the environment, EPA should add these types of facilities to the TRI.

---

[27] 62 Fed. Reg. at 23,836.
[28] What is the Toxics Release Inventory, *supra* note 17.
[29] Mark Stephan et al., Coming Clean: Information Disclosure and Environmental Performance 133 (2011).
[30] EPA, Addition of Facilities in Certain Industry Sectors; Toxic Chemical Release Reporting; Community Right-to-Know, 61 Fed. Reg. 33,588, 33,589 (June 27, 1996), https://www.govinfo.gov/content/pkg/FR-1996-06-27/pdf/96-16392.pdf.
[31] 42 U.S.C. Section 11023(b)(1)(B); *see also* 62 Fed. Reg. at 23,834.

B. Waste Incinerators Release Toxic Chemicals Covered by the TRI

Waste Incinerators generate toxic air emissions, fly and bottom ash that contains toxic metals and dioxins/furans and is often buried in landfills, or "beneficially used" in various ways.[32]

Municipal waste combustors are not permitted to burn RCRA hazardous waste, but household hazardous waste often is present in the municipal solid waste stream, as well as improperly managed commercial and industrial hazardous waste. Many products in trash and medical waste incinerators contain hazardous constituents such as toxic metals and halogenated compounds (of which per- and polyfluoroalkyl substances (PFAS) is a notorious and ubiquitous subcategory) are also disposed of as municipal solid waste, or in other waste streams burned in Waste Incinerators such as construction and demolition waste, sewage sludge, medical waste, and various types of industrial waste.

Sewage sludge incineration units burn solid waste produced by wastewater treatment facilities.[33] Though normally meant to combust domestic sewage sludge,[34] many wastewater facilities receive treated and untreated wastewater from industrial sources, meaning that the resulting sludge is often contaminated by large amounts of manufacturing chemicals covered by TRI.[35] EPA's Clean Air Act Section 129 rulemaking materials confirm that sewage sludge

---

[32] EPA, Energy Recovery from the Combustion of Municipal Solid Waste (MSW), www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw (last visited Feb. 22, 2023).

[33] EPA, Sewage Sludge Incineration Units (SSI): New Source Performance Standards (NSPS) and Emission Guidelines (EG) www.epa.gov/stationary-sources-air-pollution/sewage-sludge-incineration-units-ssi-new-source-performance (last visited Dec. 30, 2022).

[34] *Id.*

[35] For example, regular EPA surveys of biosolids/sewage sludge science continues to discover new and additional PFAS chemicals that may also be covered by TRI. *See*, EPA Fact Sheet, Report: Biosolids Biennial Report No.9 (Reporting Period 2020-2021) (December 2022), www.epa.gov/system/files/documents/2022-12/2020-2021-biennial-factsheet.pdf (explaining that EPA review of the scientific literature identified three new PFAS in sewage sludge studies published in 2020 and 2021).

incineration units emit relevant pollutants including: lead, mercury, cadmium, and dioxins/furans.[36]

EPA may still be in the process of deciding how exactly its Clean Air Act Section 129 regulations apply to Pyrolysis and Gasification (P&G) Units.[37] Nevertheless, it is beyond question that these units release TRI-listed chemicals to the air, water, and land. This is because, as EPA notes, P&G units take in and treat the same waste streams as the above-described Waste Incinerator classes.[38] As a result, it is clear that P&G units will have comparable releases of TRI-listed chemicals, even though their emissions/release profile may be apportioned differently than other facilities when looking at individual media such as air or land release. The recent news that processing of plastics pyrolysis oils releases a chemical with a shocking 1-in-4 lifetime cancer risk also makes the case for waste pyrolysis facilities to report to the TRI.[39]

Trash incinerators release many TRI-listed toxic chemicals into the air at levels that typically place them among the largest air polluters in any county in which they sit, on par with coal power plants, cement kilns, paper mills, oil refineries, and airports.[40]

---

[36] EPA, Sewage Sludge Incineration Units (SSI): New Source Performance Standards (NSPS) and Emission Guidelines (EG) www.epa.gov/stationary-sources-air-pollution/sewage-sludge-incineration-units-ssi-new-source-performance (last visited Dec. 30, 2022).

[37] EPA, Fact Sheet: Advance Notice of Proposed Rulemaking on Pyrolysis and Gasification Units, 2021, at 1 www.epa.gov/system/files/documents/2021-09/fact-sheet-anprm-pyro-and-gas.pdf (noting "The Environmental Protection Agency is issuing an advance notice of proposed rulemaking (ANPRM) to assist in the potential development of regulations for pyrolysis and gasification units." and discussing EPA's prior attempts to exempt such facilities from its Section 129 rules and the stakeholder pushback to that effort).

[38] *Id.* at 1 (explaining that P&G "units are used to convert solid or semi-solid feedstocks – including solid waste (e.g., municipal solid waste, commercial and industrial waste, hospital/medical/infectious waste, sewage sludge, other solid waste), biomass, plastics, tires, and organic contaminants in soils and oily sludges").

[39] Sharon Lerner, "This 'climate-friendly' fuel comes with an astronomical cancer risk," The Guardian, Feb. 23, 2023, www.theguardian.com/environment/2023/feb/23/climate-friendly-us-program-plastics-fuel-cancer (last visited March 12, 2023).

[40] 2017 National Emissions Inventory (NEI) data, *supra* note 14.

In addition to air pollution, 25-30% of the tonnage of waste burned remains as fly and bottom ash produced at Municipal Waste Combustors.[41] Significant tonnage of ash is also generated in other forms of waste incineration as well.[42] Waste Incinerator ash contains dioxins, heavy metals and other toxic constituents.[43] Even when landfilling ash, it has been found to blow off of trucks and blow off of the top of landfills, especially when "beneficially used" as alternative daily cover material, or to build internal roads within a landfill, where heavy waste trucks can kick up the ash dust when repeatedly driving over it.[44] Increasingly, the industry is trying to "recycle" incinerator ash to make roads or for other purposes that further expose workers, neighbors and the environment.[45] There is a major lack of transparency about where ash from incinerators is going in these beneficial use and recycling schemes, making TRI reporting vital.

---

[41] Energy Justice Network, Trash Incinerator Ash - Nearly 30 tons for every 100 tons burned www.energyjustice.net/incineration/ash (finding the average ash-to-waste tonnage to be 29 percent among eight facilities) (last visited Dec. 30, 2022); *see also* EPA, Energy Recovery from the Combustion of Municipal Solid Waste (MSW), www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw ("The amount of ash generated ranges from 15-25 percent (by weight) and from 5-15 percent (by volume) of the MSW processed.") (last updated Feb. 22, 2023).

[42] One Sewage Sludge Incineration facility in Minnesota generates 37 tons of ash per day, suggesting SSI units create significant amounts of ash for land deposition/release. Persephone Ma, *Sewage sludge incinerator ash as an agronomic phosphorus source*, Sept. 8, 2022, laas.umn.edu/events/ma-phd-defense; *see also* Wenlin Yvonne Lin et al., *Evaluation of sewage sludge incineration ash as a potential land reclamation material*, 357 J. Hazard. Material 63 (2018), pubmed.ncbi.nlm.nih.gov/29864689/.

[43] C. Ferreira, A. Ribeiro, L. Ottosen, *Possible applications for municipal solid waste fly ash*, B96 J. Hazard. Material 201–216, 202 (2003), upyun.hw2019.tp13.com/uploads/20200816/426b39555472967849e08973e2eb5138.pdf.

[44] Ash blowing off-site has been witnessed at a number of ash landfills and has been documented at sites such as Saugus, Massachusetts and Baltimore, Maryland. *See* Maryland Department of the Environment memo to Baltimore City Department of Public Works Bureau of Solid Waste, June 30, 2010. www.cleanairbmore.org/uploads/Quarantine-Road-Ash-Letter.pdf (note comments on page 3). Some landfills, such as Republic's Old Dominion Landfill in Virginia, use incinerator ash to make internal roads at the landfill where waste trucks driving over it repeatedly could kick up ash dust.

[45] *See* Xiaofei Sun et al., *A review on the management of municipal solid waste fly ash in American*, 31 Procedia Environmental Sciences 535–40, 539 (2016), tinyurl.com/fdss6wt8. *See also* C. Ferreira, A. Ribeiro, L. Ottosen, *Possible applications for municipal solid waste fly ash*, B96 J Hazard Mater 201–216, 202 (2003), upyun.hw2019.tp13.com/uploads/20200816/426b39555472967849e08973e2eb5138.pdf, (discussing additional potential uses for highly toxic fly ash in construction materials, geotechnical applications, agriculture, and miscellaneous uses).

C. Waste Incinerators Harm Human Health

Studies find that proximity to waste incineration may increase risks of cancers, birth defects, and other adverse health impacts.[46] A 2021 review found studies showing higher levels of dioxin in people living near incinerators and eight studies showing higher adverse birth outcomes.[47] A 2019 review published in the *International Journal of Environmental Research and Public Health* summed up research on incinerator health impacts 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].[48] (emphasis added)

The review found that that men with higher exposures to incinerator pollution had statistically significant increases in death from lymphohematopoietic cancers (leukemia, non-

---

[46] Tait PW, Brew J, Che A, Costanzo A, Danyluk A, Davis M, Khalaf A, McMahon K, Watson A, Rowcliff K, Bowles D. *The health impacts of waste incineration: a systematic review*, 44 Aust N Z J. Public Health 40 (Feb 2020), doi: 10.1111/1753-6405.12939. Epub 2019 Sep 18. PMID: 31535434. pubmed.ncbi.nlm.nih.gov/31535434/.

[47] Vinti G, Bauza V, Clasen T, Medlicott K, Tudor T, Zurbrügg C, Vaccari M, *Municipal Solid Waste Management and Adverse Health Outcomes: A Systematic Review*, 18 Int. J. Environ R. Public Health 4331 (Apr. 2021), doi: 10.3390/ijerph18084331. PMID: 33921868; PMCID: PMC8072713. www.ncbi.nlm.nih.gov/pmc/articles/PMC8072713/.

[48] Romanelli et al., *Mortality and Morbidity in a Population Exposed to Emission from a Municipal Waste Incinerator. A Retrospective Cohort Study*, 16 Int. J. of Envt'l Research and Public Health 2863 (2019), www.ncbi.nlm.nih.gov/pubmed/31405116 (emphasis added).

Hodgkin lymphoma, multiple myeloma, etc.), cardiovascular diseases, and "natural causes;" and in women, increased death from acute respiratory disease.[49]

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."[50]

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.[51] 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."[52]

---

[49] *Id.*

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

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

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

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."[53] A 2011 study, also from Italy, found that women with the highest levels of exposure to heavy metals (lead, cadmium, mercury, antimony, arsenic, chromium, cobalt, copper, manganese, nickel, vanadium, tin) 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.[54]

A 2011 study looked at six major pollutants (including the TRI-listed chemical ammonia, as well as particulate matter, which is an amalgamation of pollutants including many TRI-listed chemicals) 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.[55] Even oil refineries and fossil fuel power plants were less harmful, according to this study.

Trash incinerators' releases of dioxins and furans are of high concern and have an outsized toxic impact on communities. The EPA has found that food is the primary exposure route for dioxins and furans, but contaminated air and water are also potential exposure pathways.[56] These classes of chemicals represent some of the most toxic chemicals known to science. For example, as far back as 1985 the EPA has stated "2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is one of the most toxic and environmentally stable pollutants. In addition to various toxic effects,

---

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

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

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

[56] EPA, Archive Document, Dioxins and Furans, archive.epa.gov/epawaste/hazard/wastemin/web/pdf/dioxfura.pdf.

TCDD has been found to cause teratogenic, fetocidal, reproductive and carcinogenic effects in animals. In humans it adversely affects various organ systems and is probably carcinogenic as well."[57,58,59]

Waste Incinerator air pollution contributes to cancers, birth defects, learning disabilities, and a myriad of other public health problems, exacerbating existing health disparities considering where the largest and most polluting incinerators sit. Studies that have found connections between trash incinerators and public health primarily notice increased risk of cancers associated with proximity to facilities.

5. WASTE INCINERATORS SATISFY THE EPA'S MULTIFACTOR TEST

EPA has considered three primary factors when determining whether the EPCRA Section 313 statutory standard would be met by the addition of facilities in new industry groups. These three factors are:

> (1) Whether one or more toxic chemicals are reasonably anticipated to be present at facilities within the candidate industry group (known as the ''chemical'' factor);
> (2) whether facilities within the candidate industry group ''manufacture,'' ''process,'' or ''otherwise use'' these toxic chemicals (known as the ''activity'' factor); and,
> (3) whether facilities within the candidate industry group can reasonably be anticipated to increase the information made available pursuant to EPCRA section

[57] U.S. Environmental Protection Agency, Mukerjee, D., C. Ris, & J. Schaum, Health Risk Assessment Approach for 2,3,7,8-Tetrachlorodibenzo-P-Dioxin (Draft), Washington, DC, EPA/600/8-85/013 (NTIS PB86-122546/AS) (1985), *available at* cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=50407.
[58] Mocarelli, et. al., *Paternal concentrations of dioxin and sex ratio of offspring*, 355 Lancet 1838-9, (May 2000), www.ncbi.nlm.nih.gov/pubmed/10866441 ("2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD or dioxin), is commonly considered the most toxic man-made substance.").
[59] Cairns T, Fishbein L, Mitchum RK, *Review of the dioxin problem. Mass spectrometric analyses of tetrachlorodioxins in environmental samples*, 7 Biomed Mass Spectrom 484-92 (Nov. 1980), doi: 10.1002/bms.1200071107. PMID: 7013844, pubmed.ncbi.nlm.nih.gov/7013844/.

313, or otherwise further the purposes of EPCRA section 313 (known as the ''information'' factor).[60]

For the reasons set forth below, waste incinerators meet these three factors. Waste incinerators: 1) are reasonably anticipated to be using one or more toxic chemicals on the TRI list; 2) "otherwise use" toxic chemicals under EPA's application of the standard; and, 3) can be reasonably anticipated to increase access to useful information and further the purposes of EPCRA section 313 by reporting to TRI.

A. Waste Incinerators Meet the Chemical and Activity Factors

Waste Incinerators meet the chemical and activity factors for addition into the TRI. Because these two factors are closely related and overlap when applied to Waste Incinerators, this petition discusses these two factors together.

In addressing the chemical factor, EPA considers "evidence indicating that facilities within an industry group are reasonably anticipated to have involvement with one or more EPCRA section 313 listed toxic chemicals as part of its routine operations."[61] EPA states that, "Association with section 313 listed toxic chemicals suggests that facilities within industry groups should be covered under EPCRA section 313, given the purpose of EPCRA section 313 is to provide information to the public about toxic chemicals in their communities."[62]

In addressing the activity factor, EPA assesses "whether facilities within the candidate industry group 'manufacture,' 'process,' or 'otherwise use' these toxic chemicals." In 1997, EPA promulgated regulations that define "otherwise use" to include disposal, stabilization (without

[60] 62 Fed. Reg. 23,836.
[61] 61 Fed. Reg. 33,594.
[62] *Id.*

subsequent distribution in commerce) and treatment for destruction if the toxic chemical was produced as a result of waste management activities on materials received from off-site.[63] EPA interprets waste management to include the following activities: recycling, combustion for energy recovery, treatment for destruction, waste stabilization, and release, including disposal.[64] EPA states that waste management "does not include the storage, container transfer, or tank transfer if no recycling, combustion for energy, treatment for destruction, waste stabilization or release of the chemical occurs at the facility."[65]

In defining "otherwise use," EPA explained that if a company received an EPCRA-listed toxic chemical above the reporting threshold from off-site or if an EPCRA-listed toxic chemical was created in waste management activities conducted on materials received from off-site, the disposal of the chemical would be considered an ''otherwise use'' activity and would need to be reported if the releases met the threshold for reporting that chemicals.[66]

Waste Incinerators meet the chemical factor because they are reasonably anticipated to be using one or more toxic chemicals on the TRI list. As previously discussed, Waste Incinerators combust TRI-listed chemicals that are found in the regular municipal waste stream, such as

---

[63] *See* 40 CFR 372.3:

> *Otherwise use* means any use of a toxic chemical, including a toxic chemical contained in a mixture or other trade name product or waste, that is not covered by the terms "manufacture" or "process." Otherwise use of a toxic chemical does not include disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction unless:
> (1) The toxic chemical that was disposed, stabilized, or treated for destruction was received from off-site for the purposes of further waste management; or
> (2) The toxic chemical that was disposed, stabilized, or treated for destruction was manufactured as a result of waste management activities on materials received from off-site for the purposes of further waste management activities. Relabeling or redistributing of the toxic chemical where no repackaging of the toxic chemical occurs does not constitute otherwise use or processing of the toxic chemical.

[64] 62 Fed. Reg. 23,850.

[65] *Id.*

[66] 61 Fed. Reg. 33,597.

mercury, lead and per- and polyfluoroalkyl substance (PFAS) chemicals that are required to report to the TRI.[67]

Waste incinerators also meet the activity factor because they "otherwise use" TRI-listed chemicals. This is because waste incinerators receive materials containing TRI-listed chemicals and chemical classes from off-site for the purposes of waste management and engage in the following activities: recycling, combustion for energy recovery, treatment for destruction, waste stabilization, and release for disposal. Waste Incinerators also create TRI-listed chemicals in their waste management processes when they, for example, burn wastes in such a way as to create dioxins, furans, and PFAS chemicals out of wastes containing precursor chemicals. The processes of disposal, stabilization and destruction of various types of wastes releases TRI-listed toxic chemicals. These toxic chemicals are released primarily through air emissions when the waste is burned and in the disposal or use of the ash that contains TRI-listed chemicals.

Finding that waste incinerators "otherwise use" TRI chemicals and meet the activity factor is consistent with past EPA action under EPCRA section 313. In 1997, EPA added Refuse Systems, Solid Waste Combustors and Incinerators, and Materials Recovery Facilities that are regulated under the Resource Conservation and Recovery Act (RCRA) to the TRI. When discussing the addition of facilities that combust and incinerate hazardous waste, the EPA found that waste facilities that "otherwise use" listed chemicals "for purposes of threshold determinations and the amounts released or managed as a waste would be subject to reporting under EPCRA section

[67] EPA, Toxics Release Inventory (TRI) Program, List of PFAS Added to the TRI by the NDAA, www.epa.gov/toxics-release-inventory-tri-program/list-pfas-added-tri-ndaa (last visited July 1, 2022). Jeff Ryan, US EPA – Office of Research and Development, Center for Environmental Measurements and Modeling PFAS Incineration: EPA Activities and Research, State/USEPA Region 5 Air Toxics Risk Assessment Meeting 6 (Nov. 13, 2019), cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=539774.

313[.]"[68] Therefore, in its 1997 rulemaking listing RCRA-regulated incinerators, the EPA determined that:

> Some EPCRA section 313 listed toxic chemicals that may be manufactured, processed, or otherwise used by facilities in this industry group include: hydrochloric acid, hydrofluoric acid and sulfuric acid (aerosol), which may be coincidentally manufactured during some treatment for destruction [activities]; chlorine, which is used in some treatment operations (Ref. 20); and numerous other chemicals otherwise used under EPA's revised interpretation, such as chlorobenzene, dichlorobenzene, formaldehyde, and metals (e.g., lead) and their compounds.[69]

By "coincidentally manufacturing" acid gases and other TRI-listed chemicals, Waste Incinerators "otherwise use" the chemicals EPA noted here just as RCRA-regulated hazardous waste incinerators do. Moreover, Waste Incinerators burn materials from off-site to create electricity for the grid, similar to fossil-fuel fired power plants that EPA has also added to the TRI facilities list. As with coal and oil-fired electric plants that otherwise use chemicals by burning them to produce heat and electricity,[70] trash incinerators otherwise use TRI-listed chemicals to produce heat and electricity.

i. Air releases (chemical factor)

TRI-listed chemicals are released into the air when the waste is burned. EPA data from facility reporting to the 2017 National Emissions Inventory (NEI) contains data on relevant emissions from seventy-six of the commercial "municipal waste combustors" operating at the time.[71] There are currently sixty-eight municipal waste incinerators as of January 1, 2023.[72]

---

[68] 61 Fed. Reg. 33,605.
[69] 61 Fed. Reg. 33,606.
[70] Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know, 62 Fed. Reg. 23,834 (May 1, 1997), www.govinfo.gov/content/pkg/FR-1997-05-01/pdf/97-11154.pdf.
[71] 2017 National Emissions Inventory (NEI) data, *supra* note 14.
[72] Commercial Trash Incinerators in the U.S., *supra* note 9.

It shows that the industry is a significant contributor to toxic emissions of TRI-listed chemicals, some of which are also required to be tracked in NEI:

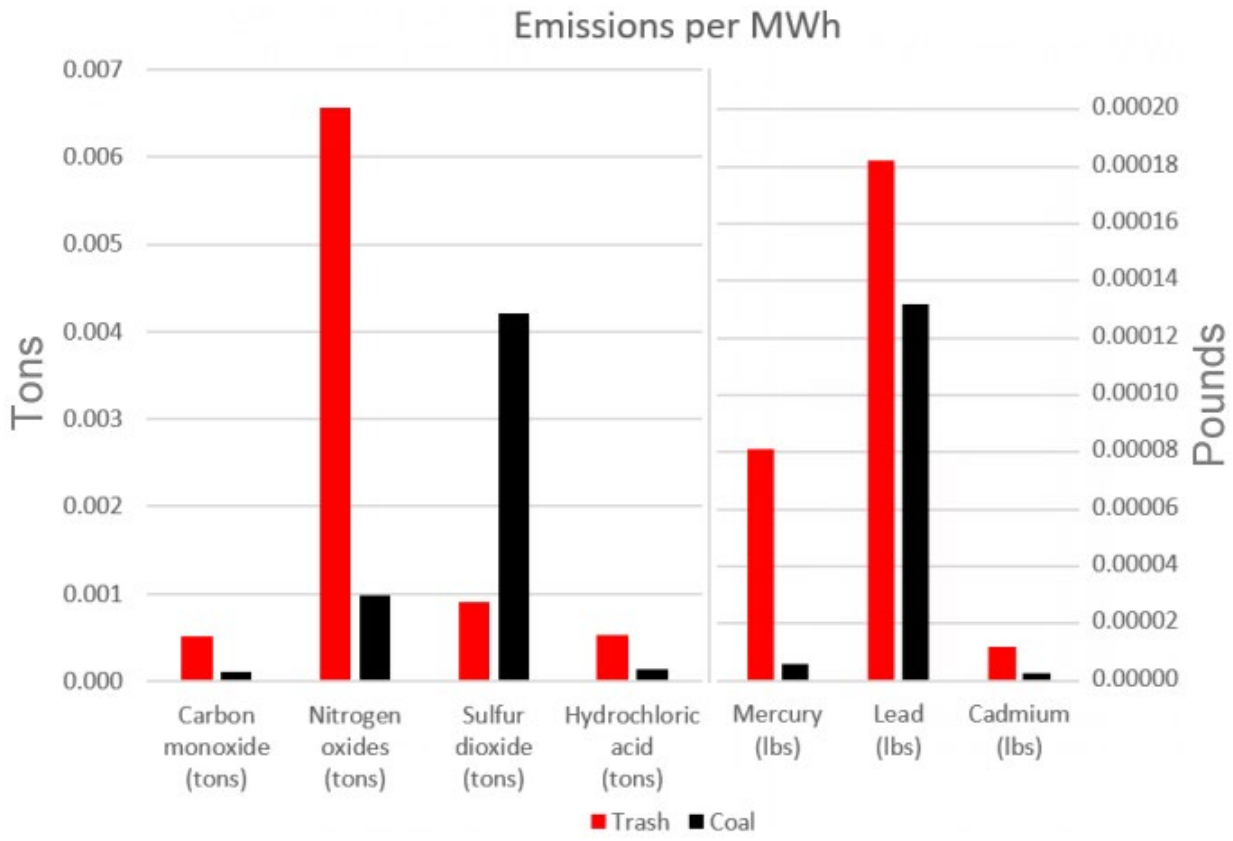
Table 1. EPA NEI 2017 reporting of TRI-listed pollutants emitted by Municipal Waste, Medical Waste, and Sewage Sludge Incinerators

	Municipal Waste Incinerators		Medical Waste Incinerators		Sewage Sludge Incinerators	
TRI Chemical	Pounds	Facilities Reporting (76 total)	Pounds	Facilities Reporting (18 total)	Pounds	Facilities Reporting (61 total)
Acrolein	649	23	0.0	1	0	2
Ammonia	678,651	57	71.8	3	29,577	18
Arsenic	324	60	0.5	7	175	37
Benzene	8,713	48	9.2	7	5,686	39
Benzo[a]Pyrene	606	35	0.3	3	0	6
Beryllium	9	39	0.1	8	3	27
Cadmium	954	74	0.9	11	268	42
Chromium (VI)	132	57	2.3	11	156	33
Cobalt	36	32	0.0	2	172	20
Formaldehyde	8,085	54	47.1	8	7,677	25
Hydrochloric Acid	2,553,960	61	185,950.7	16	19,846	39
Lead	3,517	74	33.3	12	328	51
Manganese	644	39	10.1	8	508	26
Mercury	764	72	7.1	13	751	45
Nickel	798	57	24.3	8	1,109	39

A 2011 comparison by the New York State Department of Environmental Conservation of the state's coal power plants to the state's trash incinerators found that hydrochloric acid, mercury, lead, and cadmium emissions were all far higher from trash incineration than from coal plants on a "pollution per unit of energy" basis, as summarized in the following chart.[73]

[73] New York State Department of Environmental Conservation, *In the Matter of the Application of: Covanta Energy Corporation for Modification of the List of Eligible Resources Included in the Main Tier of New York's Renewable Portfolio Standard Program to Include Energy from Waste Technology*, Case No. 03-E-0188 at 27, Aug. 19, 2011, documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={DEEA097E-A9A6-4E53-898C-0BC2F4C60CC4} (stating that mercury emissions from trash incinerators were over fourteen times more than those from coal plants, cadmium was over four times more, hydrochloric acid was nearly four times more, and lead was 1.38 times more).

Figure 1. New York Department of Environmental Conservation Comparison of Trash Incinerator to Coal Power Plan emissions rates



A comparison of 2018 emissions data between Maryland's trash incinerators and coal plants found the same.[74] A national analysis using interim 2018 data from EPA's National Emissions Inventory finds that, per unit of energy produced, trash incinerators released 6.2 times as much lead, 5.2 times as much mercury, 3.3 times as much benzene, 2.8 times as much toluene,

[74] Environmental Integrity Project, Testimony Supporting HB0332, Maryland House Economic Matters Committee, Feb. 2, 2021, at 1–2 mgaleg.maryland.gov/cmte_testimony/2021/ecm/1X3KuovEy_wCAbXjVDAAavoVYEf-azBl7.pdf ("Maryland's two incinerators emitted, on average, seventeen (17) times more of the neurotoxin mercury per unit of energy than Maryland's four largest coal plants. . . . Notably, when looking at the Wheelabrator trash incinerator in Baltimore City in isolation, our analysis showed that the 2018 mercury emissions rate from that incinerator was, on average, 33 times more per unit of energy than the rate of the coal plants.").

and 2.4 times as much cadmium as coal power plants did.[75] Coal power plants are now reporting to TRI, but incinerators are not.

ii. Land Disposal (chemical factor)

The incineration of waste creates significant amounts of fly ash and bottom ash. Ash is the remains from the combustion process. Fly ash is the residue from air pollution controls while bottom ash forms at the bottom of the combustion chamber. Incinerator ash is typically landfilled, and is often used as alternative daily cover material at landfills. Efforts to reuse or recycle ash, and to extract metals from ash, have been growing over the years and represent further exposure pathways that are not well tracked or regulated. The chemical composition of the ash varies depending on the original Waste Incinerator feedstock and the combustion process.[76] All of these waste management practices meet the definition of a release under the TRI and could contaminate soil, water, or air, depending on how the ash is used and managed upon release.

Currently, no national reporting requirements or mechanisms exist for facilities to report the amounts of toxic chemicals in fly ash or bottom ash or whether a Waste Incinerator would meet the TRI reporting thresholds. Nevertheless, limited data from Minnesota municipal waste combustor owner/operator reporting, mandated by Minnesota Statutes 115A.97 and Minnesota

[75] Energy Justice Network, *Trash Incineration More Polluting than Coal*, www.energyjustice.net/incineration/worsethancoal (analysis using EPA interim 2018 National Emissions Inventory data).
[76] EPA, Energy Recovery from the Combustion of Municipal Solid Waste (MSW), www.epa.gov/smm/energy-recovery-combustion-municipal-solid-waste-msw (last visited Feb. 22, 2023).

Rules 7035.2910,[77] suggests that these facilities are significant sources of ash bound for landfills laced with dioxins and furans,[78] lead, mercury, cadmium, and arsenic.[79] Beyond Minnesota ash data, there is significant evidence that ash produced during the waste incineration process contains TRI-listed chemicals in significant amounts.

For example, increases in the efficacy of air pollution control technology in removing toxic chemicals such as mercury, cadmium, lead, and hydrochloric acid from air emissions means that a vast majority of these toxic releases will end up in the fly ash and released to landfills.[80] In fact, the use of activated carbon injection at some or all units at 60 of the nation's 68 municipal waste incinerators increases dioxin formation, but transfers much of that dioxin to the ash.[81,82,83] Indeed, 1990s-era contemporaneous instructions to the landfilling industry from Minnesota regulators asserted that the improvement in air emissions regulation and technology would have a direct impact on the pollution levels in municipal combustion fly ash, which would require

[77] This reporting is limited to twenty-five chemicals and chemical classes for total composition in incinerator ash, reported either quarterly or annually, and a similar number of chemicals and chemical classes whose leaching potential is reported quarterly or annually, according to the regulations. *See* Minn. R. § 7035.2910, *available at* www.revisor.mn.gov/rules/7035.2910/. It appears that most, if not all, reporting is conducted annually at this point, owing to the enforcement discretion of state regulators.

[78] See 2020 Annual Report, Polk County Landfill, Permit No. SW-124, at Table 3 (Summary of Semi-Volatile Organic Compounds, Dioxins and Furans - Ash Leachate).

[79] See Polk County 2021 Annual Ash Report, at Table 2 (Combined Ash Total Composition Analyses Summary (2012-2021)).

[80] *See* EPA Memorandum: Emissions from Large and Small MWC Units at MACT Compliance, from Walt Stevenson OAQPS/SPPD/ESG, to Large MWC Docket (Aug. 10, 2007), *available at* www.regulations.gov/document/EPA-HQ-OAR-2005-0117-0164 (asserting that after facilities installed Maximum Achievable Control Technology they were able to reduce the air pollution of: dioxins and furans by more than 99 percent; mercury by 96 percent; cadmium by 96 percent; lead by 97 percent; hydrochloric acid by 94 percent).

[81] U.S. Energy Information Administration, Form EIA-860 detailed data with previous form data (EIA-860A/860B), www.eia.gov/electricity/data/eia860/ (information in "Environmental Equipment" table).

[82] Chang MB, Lin JJ, *Memory effect on the dioxin emissions from municipal waste incinerator in Taiwan*, 45 Chemosphere 1151-7 (Dec 2001), doi: 10.1016/s0045-6535(00)00571-3, pubmed.ncbi.nlm.nih.gov/11695628/.

[83] Kawakami, I., Esaki, M., Sumitomo, M., Nakano, M., Tanaka, M., *Reduction of PCDDs and PCDFs emissions from an MSW incineration plant*, 31 Organohalogen Compounds 393-396 (1997).

rigorous testing of landfilled waste to assess increases in toxicity because of the increase of pollutants in fly ash.[84]

Available data seems to support the assumption that TRI-listed chemicals are increased in land releases of ash to the extent they have been removed from air emissions. A 2014 study by University of Wisconsin graduate students provides additional information about TRI-listed chemicals found in fly ash. That study found that fly ash from municipal waste incinerators contained high enough arsenic and antimony levels to exceed the EPA's Maximum Contaminant Levels for drinking water.[85] Both arsenic and antimony and their compounds are listed TRI chemicals. While fly ash alone will often fail EPA's Toxicity Characteristic Leaching Procedure (TCLP) test for whether it must be disposed of as hazardous waste, the industry combines fly ash with bottom ash to dilute it so that it passes the test. The use of lime injection in scrubbers also alters the pH of the ash in such a way as to help it pass the test.[86] Despite the usual "non-hazardous" determination, trash incinerator fly and bottom ashes have been found to be biotoxic using the TCLP test, as well as another test method.[87] In addition to leachable heavy metals,

[84] *See* Minnesota Pollution Control Agency (MPCA), Letter on Variance from Ash Testing Rules, from Gary A. Pulford Solid Waste Section Manger, to all MSW Combustor Ash Facilities 2 (May 1, 1996), web.archive.org/web/20210604050050/https://www.pca.state.mn.us/sites/default/files/solidwaste-combustorashtesting.pdf.

[85] Yibo Zhang, Jiannan Chen, Kevin Perthel, *Leaching Characteristics of Fly Ash from Municipal Solid Waste Incineration* at 7 (University of Wisconsin Solid Waste Research Program, Student Project Report, May 2014) (on file with petitioners).

[86] Paul & Ellen Connett, "The Great Incinerator Ash Scam," Parts 1-3, *Waste Not* issues 315-317, March 1995, www.energyjustice.net/incineration/ash.pdf.

[87] Jing-Dong Chou, Ming-Yen Wey, Hsiu-Hao Liang, Shih-Hsien Chang, *Biotoxicity evaluation of fly ash and bottom ash from different municipal solid waste incinerators*, 168 J Hazard Materials 197-202 (Aug. 30, 2009), pubmed.ncbi.nlm.nih.gov/19264394/.

trash incinerator fly ash contains dioxins, furans, and polycyclic aromatic hydrocarbons,[88] all of which are also listed within TRI.[89]

This also seems to be true for newly-listed TRI PFAS chemicals found in ash. Minnesota regulators tested for TRI-listed PFAS chemicals – perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanoic acid (PFBA) – in landfills that took municipal waste combustor ash and found that these PFAS "were detected in leachate and gas condensate at every MSW-Combustor Ash and Industrial landfill[.]"[90] The Minnesota regulators also found enough groundwater contamination at some land disposal sites that they concluded that PFAS groundwater contamination at unlined landfills merited further evaluation.[91] A 2021 study found that high PFAS levels were found in leachate from municipal waste incinerator ash, indicating that large amounts of PFASs leached out readily from ash, as relatively lower levels were found in the fly and bottom ashes.[92]

Regulatory oversight of waste incinerators' ash management in California, Maryland, and Massachusetts have documented examples of trash incinerators' transported ash being released to land and waters. In California, in March 2018, "a CalRecycle inspector found an excessive

---

[88] C. Ferreira, A. Ribeiro, L. Ottosen, *Possible applications for municipal solid waste fly ash*, B96 J Hazard Mater 201–216, 202 (2003), upyun.hw2019.tp13.com/uploads/20200816/426b39555472967849e08973e2eb5138.pdf.

[89] EPA, TRI Program, GuideME, Chemical List, Dioxin and dioxin-like compounds, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:chemical-detail:::::casrn:N150 (Dioxin and dioxin-like compounds); EPA, TRI Program, GuideME, Chemical List, Polycyclic aromatic compounds, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:chemical-detail:::::casrn:N590 (Polycyclic aromatic compounds (PACs)); EPA, TRI Program, GuideME, Chemical List, Furan, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:chemical-detail:::::casrn:110-00-9 (furan) (all last visited Sept. 6, 2022).

[90] MPCA, 2005-2008 Perfluorochemical Evaluation at Solid Waste Facilities in Minnesota Technical Evaluation and Regulatory Management Approach 2 (Apr. 14, 2010), www.pca.state.mn.us/sites/default/files/c-pfc4-01.pdf.

[91] *Id.* at 3.

[92] Shanshan Liu et al., *Perfluoroalkyl substances (PFASs) in leachate, fly ash, and bottom ash from waste incineration plants: Implications for the environmental release of PFAS*, 795 Science of the Total Environment 148,468 (2021), www.sciencedirect.com/science/article/abs/pii/S0048969721035403.

buildup of ash near the facility's buildup of ash near the facility's roads with heavily clogged sewage drain grates near [the incinerator's] ash storage building" and noted that "ash was tracked off-site and that it was difficult to breathe due to the amount of ash outside of [the incinerator]" and that "accumulation of ash on the roads around the facility and throughout the facility has been a recurring issue that puts community members and the environment at risk."[93] In 2011, a trash incinerator in Massachusetts was fined for discharging 15,000 gallons of ash water and 450 cubic yards of ash into waterways adjacent to a landfill.[94] In Baltimore, the Maryland Department of the Environment wrote to the City of Baltimore ordering them to stop using incinerator ash as alternative daily cover materials on a municipal landfill because it was blowing off-site.[95]

As established by EPA precedent and affirmed by federal courts, even if toxic ash was only released to lined landfills, such releases must be reported under the TRI.[96]

B. Waste Incinerators Meet the Information Factor

Waste Incinerators also meet the information factor for inclusion in the TRI. The "information factor" requires an assessment of "whether facilities within the candidate industry group can reasonably be anticipated to increase the information made available pursuant to

[93] *See* Earthjustice, Vestiges of Environmental Racism: Closing California's Last Two Municipal Waste Incinerators, 8-9 (2021), earthjustice.org/sites/default/files/files/earthjustice_ca-incinerator-report_20211108.pdf.
[94] Brian Messenger, *Wheelabrator Agrees to Pay $7.5 Million for Violations*, Eagle-Tribune, May 3, 2011, www.eagletribune.com/news/local_news/wheelabrator-agrees-to-pay-7-5-million-for-violations/article_9b536731-4660-5fc3-ba7a-d950268c436d.html ("The violation at Wheelabrator Millbury involved the release of 15,000 gallons of ash water and 450 cubic yards of ash into a brook and wetlands adjacent to a Shrewsbury landfill.").
[95] Maryland Department of the Environment memo to City of Baltimore Department of Public Works Bureau of Solid Waste, June 30, 2010, www.cleanairbmore.org/uploads/Quarantine-Road-Ash-Letter.pdf.
[96] *See Dayton Power & Light Co. v. Browner*, 44 F. Supp. 2d 356, 361 (D.D.C. 1999) (supplemental memorandum filed Apr. 8, 1999).

EPCRA section 313, or otherwise further the purposes of EPCRA section 313."[97] Requiring trash incinerators to report under the TRI will increase the amount of information made available under EPCRA section 313 and further the purpose of EPCRA.

i. NEI Data and EPA Research Demonstrate a Significant Number of Waste Incinerators Will Meet the TRI Reporting Threshold

Available NEI data confirm that Waste Incinerators burn and release significant amounts of TRI-listed chemicals that exceed the TRI-reporting threshold.

a. *Mercury*

Of the 75 Municipal Waste Combustors reporting air emissions of mercury to the 2017 NEI, their total annual emissions added up to 763.67 pounds. Twenty-one of them reported releasing mercury in excess of the TRI reporting threshold of ten pounds/year of "otherwise used" mercury.[98] The average Municipal Waste Combustor reported 10.76 pounds of mercury.[99]

b. *Lead*

Of the 73 Municipal Waste Combustors reporting air emissions of lead to the 2017 NEI, their total annual emissions added up to 3,516.87 pounds. Eleven facilities reported releasing lead in excess of the 100-pound threshold for reporting releases of lead and lead

[97] 61 Fed. Reg. 33,605-33,606.
[98] *See* EPA, Toxics Release Inventory: Guidance for Reporting Mercury and Mercury Compounds Category 1 (Feb. 2019), ordspub.epa.gov/ords/guideme_ext/guideme_ext/guideme/file/tri%20guidance%20for%20mercury%20and%20mercury%20compounds%20-%20revised%20february%202019.pdf; *see also* EPA, TRI Program, Reporting Forms and Instructions, B.4 Threshold Determinations, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:rfi:::::rfi:2_4 (last visited Feb. 22, 2023).
[99] 2017 National Emissions Inventory (NEI) data, *supra* note 14.

compounds.[100,101] The Spokane, Washington trash incinerator topped the list, reporting 406.35 pounds of lead in the 2017 NEI.[102]

c. *Hydrochloric Acid*

Of the 60 Municipal Waste Combustors reporting air emissions of hydrochloric acid to the 2017 NEI, their total emissions added up to 2,553,959.72 pounds. Fourty-eight of the 60 facilities (80%) reported releasing hydrochloric acid in excess of the TRI reporting threshold of 10,000 pounds of "otherwise used" hydrochloric acid.[103] The average Municipal Waste Combustor reported 42,566 pounds of hydrochloric acid. One medical waste incinerator (Stericycle in Warren, Ohio) reported releasing a whopping 178,600 pounds of hydrochloric acid in 2017.[104]

d. *Dioxins and Furans*

Incineration of municipal solid waste is a major contributor of dioxins and furans.[105] TRI has a reporting threshold of 0.1 grams from dioxins and dioxin-like substances, which include furans.[106] Based on the EPA's long experience with dioxins and furans it seems that the agency has ample evidence demonstrating that TRI reporting would increase information on these

---

[100] EPA, TRI Program, Reporting Forms and Instructions, B.4 Threshold Determinations, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:rfi:::::rfi:2_4 (last visited Feb. 22, 2023).
[101] 2017 National Emissions Inventory (NEI) data, *supra* note 14.
[102] Air Pollutant Report for Spokane Regional Waste-to-Energy Facility, ECHO, echo.epa.gov/air-pollutant-report?fid=110000550886 (Lead data available under "Emissions data" section) (last visited Feb. 22, 2023).
[103] EPA, TRI Program, Reporting Forms and Instructions, B.4 Threshold Determinations, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:rfi:::::rfi:2_4 (last visited Feb. 22, 2023); *see also* EPA, Toxics Release Inventory: Guidance for Reporting Hydrochloric Acid (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size) 3 (Feb. 2019), ordspub.epa.gov/ords/guideme_ext/guideme_ext/guideme/file/tri%20guidance%20for%20hydrochloric%20acid%20-%20revised%20february%202019.pdf.
[104] 2017 National Emissions Inventory (NEI) data, *supra* note 14.
[105] EPA, Toxics Release Inventory (TRI) Program, Dioxin and Dioxin-Like Compounds Toxic Equivalency Information, www.epa.gov/toxics-release-inventory-tri-program/dioxin-and-dioxin-compounds-toxic-equivalency-information (last visited Sept. 7, 2022).
[106] EPA, TRI-Listed Chemicals, www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals (last visited Feb. 22, 2023).

chemicals as they are produced from Waste Incinerators.[107] Between 2017 and 2021, Covanta Delaware Valley in Chester, PA reported emitting between 2.67 and 16.83 grams each year, averaging 8.29 grams – well above the 0.1 g reporting threshold.[108] Similarly, Covanta's H-POWER in Honolulu, HI released 9 grams in 2021.[109]

In addition to NEI data, data from other developed countries also have demonstrated that these facilities produce these toxic dioxins and furans. A modern trash incinerator, built in 2011, and touted as "state of the art" under EU standards at the time, was shown just two years later to have contaminated nearby backyard chickens' eggs with high levels of dioxins and furans.[110] "All eggs of backyard chickens in Harlingen, sampled within a radius of 2 km from the REC incinerator, showed a much higher concentration of dioxin[] than allowed by the EU."[111] At the very least, these other countries' discovery of dioxins and furans in measurable amounts in releases from operating trash incinerators strongly suggests that facilities in the U.S. could be releasing more than the 0.1 gram TRI threshold,[112] most likely with the largest part in water and land releases.[113]

---

[107] EPA, Inventory of Dioxin Sources and Environmental Releases, www.epa.gov/dioxin/inventory-dioxin-sources-and-environmental-releases (last updated Aug. 24, 2020).
[108] "Dioxin Emission Table," compiled from Covanta Delaware Valley's reports by Kevin McLemore, Air Quality District Supervisor, PA Department of Environmental Protection, Sept. 14, 2022.
[109] 2021 Emissions Inventory Report, Emissions Summary for HPOWER (15003-00082), page 1 of HPOWER 2021 Annual Air Emissions Inventory and GHG Submittal for Covered Source Permit (CSP) Nos. 0255-01-C & 0255-02-C.
[110] ToxicoWatch, Case Study, Hidden emissions: A story from the Netherlands 2 (November 2018) zerowasteeurope.eu/wp-content/uploads/2018/11/NetherlandsCS-FNL.pdf (while subsequent testing included the discovery of other TRI-listed chemicals, the initial egg testing covered "polychlorinated dibenzo-p-dioxins and dibenzofurans, PCDD/Fs").
[111] *Id.*
[112] EPA, TRI Program, Reporting Forms and Instructions, B.4 Threshold Determinations, ordspub.epa.gov/ords/guideme_ext/f?p=guideme:rfi:::::rfi:2_4 (last visited Feb. 22, 2023). While the exact technology used in European trash incinerators may not be the same as those found in the U.S., the known pollutants and methods of sampling or estimating them evidenced by other countries' experience demonstrates that similar sampling and modeling would be possible under TRI.
[113] As discussed above, while air pollution controls can eliminate over 99 percent of air emissions of dioxins and furans, that likely means that these pollutants are moved to solid waste releases instead of stack emissions.

e. *PFAS chemicals*

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain PFAS to the list of chemicals covered by the TRI. For Reporting Year 2021, 176 PFAS were reportable.[114] For Reporting Year 2022, the NDAA automatically added four additional PFAS to TRI.[115] The reporting threshold for these PFAS is 100 lbs per year.[116]

As previously discussed, products containing PFAS are found in the waste stream for Waste Incinerators.[117] "PFAS are found in everyday items such as food packaging, non-stick stain repellent, textiles, and waterproof products, including clothes and other products used by outdoor enthusiasts."[118] Additionally, PFAS chemicals have been found in EPA testing of plastic packaging used to hold various goods,[119] and such packaging finds its way into various waste streams to eventually be burned by various types of Waste Incinerators. Studies show that construction and demolition wastes leach similar levels of PFAS as municipal wastes,[120]

[114] EPA, Toxics Release Inventory (TRI) Program, Addition of Certain PFAS to the TRI by the National Defense Authorization Act, www.epa.gov/toxics-release-inventory-tri-program/addition-certain-pfas-tri-national-defense-authorization-act (last visited Dec. 9, 2022).
[115] *Id.*
[116] *Id.*
[117] Jeff Ryan, US EPA – Office of Research and Development, Center for Environmental Measurements and Modeling, *PFAS Incineration: EPA Activities and Research*, State/USEPA Region 5 Air Toxics Risk Assessment Meeting 6 (Nov. 13, 2019), cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=539774.
[118] EPA, Technical Brief, Per- and Polyfluoroalkyl Substances (PFAS): Incineration to Manage PFAS Waste Streams 1 (Feb. 2020), www.epa.gov/sites/default/files/2019-09/documents/technical_brief_pfas_incineration_ioaa_approved_final_july_2019.pdf.
[119] Although EPA first looked at this issue through the lens of pesticide containers, it also studied leached PFAS levels in other substances more relevant to food, such as leaching in water. *See* EPA Memorandum, EPA's Analytical Chemistry Branch PFAS Testing Rinses from Selected Fluorinated and Non-Fluorinated HDPE Containers, March 4, 2021, www.epa.gov/sites/default/files/2021-03/documents/results-of-rinsates-samples_03042021.pdf; EPA Memorandum, Results of EPA's Analytical Chemistry Branch Laboratory Study of PFAS Leaching from Fluorinated HDPE Containers, Aug. 12, 2022, www.epa.gov/system/files/documents/2022-09/EPA%20PFAS%20Container%20Leaching%20Study%2008122022_0.pdf.
[120] Helena M. Solo-Gabriele et al., *Waste type, incineration, and aeration are associated with per- and polyfluoroalkyl levels in landfill leachates*, 107 Waste Manag. 191 (2020), www.ncbi.nlm.nih.gov/pmc/articles/PMC8335518/.

suggesting they would also emit hydrofluoric acid, PFAS, and other TRI-listed chemicals when incinerated in Waste Incinerators. Moreover, in a dedicated database EPA continues to compile and collect research on incineration as a treatment for PFAS, citing to numerous studies demonstrating known PFAS contamination in wastes sent to incinerators.[121]

Similar to the data available on dioxins, noted above, studies from other nations demonstrate PFAS is found in Waste Incinerator ash. A study from 2005 of ash from eleven municipal incinerators in Sweden found that "PFASs are occurring more often in fly ash than bottom ash (sum of PFAS 43,1-950,7 pg/g) however the two samples with the highest detected amount of PFASs (1611 and 7169,5 pg/g) were both bottom ash."[122] Consistently, a study from China found that a variety of PFAS types were present in Waste Incinerator ashes, with some higher PFAS levels associated with facilities that incinerated industrial wastes.[123] In a recent review of PFAS disposal technologies, EPA concluded that the available data do not show that incineration can destroy PFAS.[124] Instead, PFAS waste and its incineration byproducts are likely being released into communities and the environment around incineration facilities. Soil, ash,

---

[121] *See generally* EPA, PFAS Thermal Treatment Database, pfastt.epa.gov/ords/pfastt/f?p=178:1:12754860932412::::: (noting that "The PFAS Thermal Treatment Database (PFASTT) is a growing database that contains over 2,000 records of 80 sources documenting the treatability of PFAS in different media via various thermal processes.") (last visited Dec. 30, 2022).

[122] Dennis Wohlin, Örebro Universitet, Bachelor Thesis in Chemistry, Analysis of PFAS in ash from incineration facilities from Sweden, June 2020, www.diva-portal.org/smash/get/diva2:1473805/FULLTEXT01.pdf.

[123] Shanshan Liu et al., *Perfluoroalkyl substances (PFASs) in leachate, fly ash, and bottom ash from waste incineration plants: Implications for the environmental release of PFAS*, 795 Science of The Total Environment 148468 (2021), www.sciencedirect.com/science/article/abs/pii/S0048969721035403.

[124] Limited research indicates that some PFAS may be destroyed above 1,000 to 1,400 degrees Celsius. EPA, Technical Brief, Per- and Polyfluoroalkyl Substances (PFAS): Incineration to Manage PFAS Waste Streams (Feb. 2020), www.epa.gov/sites/default/files/2019-09/documents/technical_brief_pfas_incineration_ioaa_approved_final_july_2019.pdf. EPA's own experts present slides including statements like: "Hazardous waste incinerators and cement kilns may well be effective, but what about municipal waste combustors and sewage sludge incinerators (i.e., lower temperatures)?" Lara Phelps, US EPA Office of Research and Development, Center for Environmental Measurement and Modeling, PFAS Emissions Measurement and Incineration Research, National Association of Clean Air Agencies 13 (Oct. 15, 2020), www.4cleanair.org/wp-content/uploads/Phelps-National_Assoc_Clean_Air_Agencies_10152020.pdf.

groundwater, and air samples taken from incinerator sites and surrounding neighborhoods have shown elevated levels of PFAS.[125] There is growing evidence that Waste Incinerators may be spreading PFAS through the air where it is deposited into surrounding areas,[126] making PFAS contamination issues worse. Listing Waste Incinerators under the TRI will allow the public and policy makers to know the amounts of each TRI-listed PFAS being released into the environment.

ii. Canadian Data Also Supports Waste Incinerators' Satisfaction of the Information Factor

In past decisions on citizen petitions under TRI such as this one, the EPA has relied on evidence from Canada's National Pollutant Release Inventory (NPRI) to determine that the information factor is met.[127] According to the EPA, NPRI is an equivalent system to TRI, and methods used for reporting to NPRI can illustrate how American industries will be able to meet the reporting requirements of EPCRA.[128] As trash incinerators are subject to NPRI, it also should be the case that they will meet reporting requirements under the TRI. Additionally, the NPRI could provide EPA with methodologies for how trash incinerators can conduct TRI reporting.[129]

---

[125] Environmental Working Group, *Feeding the Waste Cycle: How PFAS 'Disposal' Perpetuates Contamination*, Aug. 18, 2020, www.ewg.org/news-insights/news/feeding-waste-cycle-how-pfas-disposal-perpetuates-contamination (citing studies).

[126] EPA modeling in a non-incineration context suggests that the vast majority of PFAS air emissions can travel more than 150 kilometers. Emma L D'Ambro et al., *Characterizing the Air Emissions, Transport, and Deposition of Per- and Polyfluoroalkyl Substances from a Fluoropolymer Manufacturing Facility*, 55 Environ. Sci. Technol. 862-870 (Jan 2021), doi: 10.1021/acs.est.0c06580, pubmed.ncbi.nlm.nih.gov/33395278/.

[127] See EPA 2015 Petition Response, *supra* note 23, at 5-6 (In determining that NGP met all three factors, the EPA relied upon Canadian NPRI data showing that these types of facilities "manufacture, process, or otherwise use" chemicals listed under TRI, and that a significant number of facilities would have to report, providing "significant release and waste management data").

[128] The EPA has used inclusion in NPRI to support its finding that an industry "would be required to report," describing it as "a program analogous to TRI[.]" EPA, Addition of Natural Gas Processing Facilities to the Toxics Release Inventory, 86 Fed. Reg. 66953, 66,956 (Nov. 24, 2021) https://www.govinfo.gov/content/pkg/FR-2021-11-24/pdf/2021-25646.pdf ; *see also id.* ("EPA disagrees that it improperly used Canada's NPRI data. The NPRI data provide information on what chemicals and associated quantities are universally used in the NGP industry.").

[129] Canada's current guidance on NPRI reporting, including information on the inclusion of waste incinerators, is available at Environment and Climate Change Canada, Guide for Reporting to the National Pollutant Release Inventory 2022-2024, https://publications.gc.ca/collections/collection_2022/eccc/En81-1-2022-eng.pdf.

Anecdotal reporting data within NPRI demonstrates that waste incinerators will easily meet TRI's reporting thresholds. Facilities in Quebec (NPRI ID No. 211 for the Ville de Quebec Incinerateur), Ontario (NPRI ID No. 4768 for Emerald Energy From Waste Inc.; and NPRI ID No. 29003 for Covanta Durham York Renewable Energy Limited Partnership), and British Columbia (NPRI ID No. 362 for the Metro Vancouver Waste-to-Energy Facility) all regularly exceed TRI thresholds for mercury, lead, and hydrochloric acid. Specifically:

- In the past ten years the Ville de Quebec Incinerateur emitted between 26.02 and 56.2 metric tons of hydrochloric acid, with 48.34 tons of such air emissions in the most recent reporting year, 2021.[130] Every year except 2013 (no data), 2020 (under 10 lbs air emissions reported), and 2021 (under 10 lbs air emissions reported) the facility's combined mercury emissions and land disposal exceeded 10 pounds. Every year besides 2013 (no data), 2020 (under 100 lbs air emissions reported), and 2021 (under 100 lbs air emissions reported) the facility's offsite and onsite land disposal of lead exceeded 100,000 pounds, surpassing the TRI threshold more than a thousand-fold. Also, in 2017, this facility emitted over five times the TRI threshold for dioxins.
- For every year where data was reported the Emerald Energy From Waste Inc. facility surpassed the hydrochloric acid threshold for TRI (no data reported in 2020 and 2021), and reported releases of lead in the tens of thousands of pounds.[131]

[130] In order to see the relevant data, access the NPRI dashboard and search for the relevant NPRI ID number for this facility to view the past decade of reporting data. www.canada.ca/en/environment-climate-change/services/national-pollutant-release-inventory/tools-resources-data/all-year-dashboard.html (search for facility 211).
[131] *Id.* (search for facility 4768).

From 2015 to 2021 it reported releases of mercury well above the TRI threshold, mostly sent offsite for treatment.

- The Covanta Durham York Renewable Energy Limited Partnership trash incinerator – the most modern in North America – emitted dioxins and furans beyond the TRI threshold in 2016 (their first year of reported data).[132] In all reporting years, from 2015 to 2021, the facility released tens of thousands of pounds of lead and dozens of pounds of mercury, well above TRI thresholds.
- The Metro Vancouver Waste-to-Energy Facility emitted between 36.8 and 103.9 metric tons of hydrochloric acid in reporting years 2012 to 2021, with 90.81 metric tons in the most recent reporting year.[133] It also exceeded TRI mercury and lead release limits many times over in every reporting year.

The Covanta Durham York Renewable Energy Limited Partnership, as a new facility that claims to be built to the highest standards,[134] is an example of how every waste incinerator in the U.S. (nearly all of which are decades old and no longer state-of-the-art), should be required to report to TRI even if they were outfitted with the most stringent pollution control technology. Thus, it is reasonable to assume the information factor is met even in the case of the most modern Waste Incinerators.

[132] *Id.* (search for facility 29003).
[133] *Id.* (search for facility 362).
[134] Durham York Energy Centre Frequently Asked Questions, www.durhamyorkwaste.ca/en/education-and-resources/faqs.aspx#Is-the-DYEC-safe (last visited Feb. 22, 2023).

C. The TRI Fills Data Gaps on Toxic Releases

TRI reporting can fill data gaps on Waste Incinerators' toxic releases. The public would be able to view this information on EPA's easy-to-use TRI tools, or on other databases such as Enforcement and Compliance History Online.[135]

While Waste Incinerators may be subject to some non-TRI reporting requirements under federal laws, technical or limited pollution data reporting regimes are not an adequate replacement for the broad-based data made available by TRI. One of the principal congressional sponsors of EPCRA explained its purpose as:

> Congress recognizes a compelling need for more information about the Nation's exposure to toxic chemicals. Until now, the success of regulatory programs such as the Clean Air Act, the Resource Conservation and Recovery Act, and the Clean Water Act has been impossible to measure because no broad-based national information has been compiled to indicate increases or decreases in the amounts of toxic pollutants entering our environment. As a result, the reporting provisions in this legislation should be construed expansively to require the collection of the most information permitted under the statutory language. Any discretion to limit the amount of information reported should be exercised only for compelling reasons. A second major principle of this program is to make information regarding toxic chemical exposure available to the public, particularly the local communities most affected. For too long, the public has been left in the dark about its exposure to toxic chemicals. Information that has been available under existing environmental statutes such as the Clean Water Act or the Clean Air Act, has been difficult to aggregate and interpret, which has made it difficult, if not impossible, for the public to gain an overall understanding of their toxic chemical exposure.[136]

[135] EPA, Enforcement and Compliance History Online, echo.epa.gov (last visited Feb. 7, 2022).
[136] 61 Fed. Reg. at 33,593 (quoting Congressman Edgar and citing H. Rep. 99-975, 99th Cong., 2nd Sess., p. 5313 (Oct. 7, 1986)); *see also id.* (quoting consistent statement by Senator Stafford and citing H. Rep. 99-975, p. 5185 & 5186).

The legislative intent is clear, reporting requirements under other environmental laws are not a sufficient justification for the EPA to opt not to require TRI reporting from an industry such as Waste Incinerators.

At the end of 2021, the EPA also made a consistent statement about the insufficiency of National Emissions Inventory (NEI) reporting while adding new facilities to the TRI industries list:

> Although EPA's NEI program also collects and publishes air emissions data pertaining to [natural gas processing] facilities, TRI reporting by these facilities would offer key benefits the NEI does not provide. First, the NEI is limited to air emissions, whereas TRI requires disclosure of releases to air, land, and water, as well as waste management and pollution prevention information. Second, the NEI is published on a triennial basis, whereas TRI data are collected and published annually. Third, the different purposes of the two programs drive different uses of the data they collect. TRI was developed to provide the public with information about the disposition of toxic chemicals in their communities, whereas the NEI was developed to collect data to support air modeling and risk assessments at the national level.[137]

As the EPA determined in granting a petition to add natural gas processing (NGP) facilities to TRI: "The information likely to be obtained from these facilities is not readily available elsewhere."[138] This is equally true of information on trash incinerators.

Currently, the public has limited access to data on Waste Incinerators' air emissions, and next to no information on releases of TRI-listed chemicals to land or water. Existing data on Waste Incinerators' emissions of TRI-listed chemicals and chemical classes is infrequent and incomplete. Under the Clean Air Act (CAA), trash incinerators must submit semiannual reports

[137] 86 Fed. Reg. at 66,958.
[138] EPA 2015 Petition Response, *supra* note 23, at 5.

detailing their emissions of nine pollutants.[139] The regulations that implement this statute contain no provisions for relaying these reports to the public, and existing government publications and proposed rules give an incomplete picture of emissions by trash incinerators.[140] The EPA's ICIS–Air database does provide CAA compliance, inspection, and enforcement information, but no data about emissions quantities.[141]

Meanwhile, one data source on these facilities, the NEI, lists 187 hazardous air pollutants and eight criteria air pollutants.[142] This database provides facility- and pollutant-specific information, but it has many shortcomings.[143] Compared with the TRI, the NEI data is only

[139] *See* 42 U.S.C. § 7429(a)(4) ("The performance standards promulgated under section 7411 of this title and this section and applicable to solid waste incineration units shall specify numerical emission limitations for the following substances or mixtures: particulate matter (total and fine), opacity (as appropriate), sulfur dioxide, hydrogen chloride, oxides of nitrogen, carbon monoxide, lead, cadmium, mercury, and dioxins and dibenzofurans"). *See also* EPA, Large Municipal Waste Combustors (LMWC): New Source Performance Standards (NSPS) and Emissions Guidelines, www.epa.gov/stationary-sources-air-pollution/large-municipal-waste-combustors-lmwc-new-source-performance (last visited Sept. 6, 2022).

[140] The EPA is in the process of developing a Federal Implementation Plan (FIP) under the CAA to address regional ozone pollution, a plan which would regulate the cross-state pollution produced by large sources of air emissions of Nitrogen Oxides (NOx). Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard, 87 Fed. Reg. 20,036 (Apr. 6, 2022), www.federalregister.gov/documents/2022/04/06/2022-04551/federal-implementation-plan-addressing-regional-ozone-transport-for-the-2015-ozone-national-ambient. Despite the fact that "municipal solid waste combustor units . . . . emit substantial NOx, and some states have required emissions limits for these facilities that are more stringent than the federal requirements" leading to improvements in overall NOx levels, the EPA is not proposing to regulate them under the FIP and is only taking comment on the possibility of doing so. *Id.* at 20,085, 20,049. However, the discussion of trash incinerators in this rulemaking demonstrates that the EPA has data on the emissions factor of seven types of trash incinerators "most commonly used in the industry," suggesting that the EPA would have sufficient data to adapt Canadian or European testing procedures for the technologies at use in the U.S. See *id.* at 20,085. At the same time, the information the EPA is relying upon dates from 1996, so it cannot be said that the research on these facilities' emissions has been a priority area for the EPA. The federal register notice for the FIP cites to "AP-42, Fifth Edition Compilation of Air Pollutant Emissions Factors, Volume 1: Stationary Point and Area Sources" whose chapter on "Refuse Combustion" is dated October 1996. *See* EPA, AP 42, Chapter 2, Section 2.1, Refuse Combustion, www.epa.gov/sites/default/files/2020-10/documents/c02s01.pdf.

[141] *See* EPA, ICIS-Air Search, www.epa.gov/enviro/icis-air-search (last visited Feb. 22, 2023).

[142] EPA, National Emissions Inventory, www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei (last visited Sept. 6, 2022).

[143] In deciding to add NGP facilities to the TRI, the EPA explicitly found that NEI reporting alone was insufficient regulatory coverage to match the benefits of TRI. EPA 2015 Petition Response, *supra* note 23, at 6. "Given TRI's community-right-to-know foundations, TRI data are designed to be especially accessible and manipulable, and the systems that offer them to the public over the Web provide numerous analysis, download, and visualization tools."

released every third year, and takes three years to be released. It is 2022 and the most recent data available from NEI is for 2017,[144] while 2020 data is not fully due out until March 31, 2023 (now stated as simply "spring"), and will be unreliable due to it being the first year of a pandemic, when much industry was closed down. More "normal" data (for 2019 and 2022) will not be released by NEI, and the public will need to wait until 2026 to see the first data since 2017 not severely impacted by the pandemic.[145]

There are also gaps in NEI data. Hydrochloric acid, for example, is released in large amounts at all Waste Incinerators, yet 15 municipal waste combustors and at least three medical waste incinerators in the 2017 NEI reported no data for that toxic chemical. Six of eighteen medical waste incinerators, including the nation's largest, failed to report mercury emissions to the 2017 NEI. Some facilities have test data and report to state environmental agencies, but have pollutants as significant as hydrochloric acid, lead, and mercury simply not showing up in NEI.

EPA's failure to add waste incinerators may give communities a false sense of security because TRI data gaps are hard to identify and quantify. Academic publications and media projects use TRI data to show where there are toxic hot-spots, and to analyze environmental justice trends. One such project, Propublica's ToxMap, relies on TRI and misses some very

Id. At the same time the EPA did deny the petition regarding other types of oil and gas entities, because they generally would not meet the statutory definition of "facility" or the employee minimum set in statute, and because "EPA is already engaged in a wide array of rulemaking, guidance, research and other outreach activities targeting the oil and gas extraction sector." *Id.* at 9. EPA listed 16 examples of recent initiatives it had taken regarding the oil and gas sector, including: research; air pollution regulations; water pollution regulations, guidance, and studies; chemicals regulations; waste management guidance for states; and emergency management guidance. *Id.* at 9–12. This is not the case for trash incinerators, where the EPA continues to exclude them from major regulatory schemes and where it is demonstrably the case that they are flying under some regulators' notice as "renewable energy" projects.

[144] 2017 National Emissions Inventory (NEI) data, *supra* note 14.

[145] Optimistically presuming that 2023 will be a "normal" year.

significant toxic clusters because incinerator emissions data is not reported to TRI.[146] One notorious example is the City of Chester, Pennsylvania, where the city's largest air polluter is the Covanta Delaware Valley trash incinerator, the largest waste incinerator in the nation, operating with the fewest pollution controls in the industry – in a low-income Black community known as one of the nation's worst cases of environmental racism. ToxMap shows clusters in nearby communities where oil refineries and petrochemical facilities operate, but shows nothing in the City of Chester where Covanta operates their municipal waste incinerator a block away from a sewage sludge incinerator that also is not required to report to TRI. Academic studies of the area, using EPA data that is based on TRI, show similar gaps of pollution in the City of Chester where the worst pollution cluster in Delaware County, Pennsylvania exists. Adding Waste Incinerators to the TRI would give these communities badly-needed information on the toxic pollution sources in their midst.

6. EPA'S ENVIRONMENTAL JUSTICE MANDATES SUPPORT THIS PETITION

Listing Waste Incinerators under the TRI will support the environmental justice purpose of EPCRA and the Administration's environmental justice mandates.

A. EPA's Duty to Promote Environmental Justice

Several statutes, notably in this case EPCRA, executive orders and regulations require the EPA to pursue environmental justice: equal protection from environmental hazards and equal access to environmental decision-making.[147] Public data is vital to this goal. Executive Order (EO)

[146] *See* Al Shaw and Lylla Younes, *The Most Detailed Map of Cancer-Causing Industrial Air Pollution in the U.S.*, Propublica, November 2, 2021, updated March 15, 2022, projects.propublica.org/toxmap/.
[147] *See* EPA, Environmental Justice, www.epa.gov/environmentaljustice (last visited Sept. 7, 2022).

12898 requires the agency to "collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income," and to "improve research and data collection relating to the health of and environment of minority populations and low-income populations."[148]

Back in 1996 the EPA's analysis of its inclusion of new industries, including hazardous waste facilities, in TRI demonstrated a benefit to environmental justice communities consistent with EO 12898. Summarizing its analysis, the EPA stated: "households with annual incomes less than $15,000 and minority and urban populations are slightly over-represented in communities containing facilities in the proposed industry groups."[149] The analysis then concluded that: "TRI expansion would [mean] . . . a large number of communities receiving TRI information about facilities in their vicinity for the first time. . . . creating informational benefits for certain subpopulations that previously did not receive TRI information on releases and transfers of toxic chemicals[.]"[150]

Similarly, in its latest listing of the NGP industry, the EPA asserted that it is required to consider environmental justice and incorporate it into TRI work under EOs 12898 and 14008.[151] Explaining its reasoning, the EPA noted that "In total, there are approximately 1.4 million people

[148] Exec. Order No. 12,898, 59 Fed. Reg. 7,629 (Feb. 11, 1994), www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf.
[149] 61 Fed. Reg. 33,616.
[150] *Id.*
[151] 86 Fed. Reg. at 66,961; *see id.* (noting that "for communities living near NGP facilities, there is the potential for new information about toxic chemical releases and waste management practices occurring in those communities to become available through the TRI reporting data").

living within three miles of at least one of the NGP facilities EPA identified" and some of the NGP facilities are proximate to environmental justice communities.[152]

B. Environmental Justice Mandates Trash Incinerators' Inclusion under TRI

Similar to other non-manufacturing industries added to TRI in the past, and NGP facilities added more recently, EPA cannot realize its environmental justice mission without listing trash incinerators under TRI. The un-reported toxic releases to low-income and communities of color are too significant to continue to go unreported.

The EPA has complied with Executive Order 12898 by developing EJSCREEN, an online mapping tool that allows citizens to view environmental quality, pollution sources, and socioeconomic data nationwide.[153] This website draws information from several sources, including TRI reports on air pollution and wastewater discharges.[154] In effect, as long as trash incinerators do not report to TRI, the information the public sees on EJSCREEN remains incomplete. Additionally, since the 2020 TRI data publication, TRI has a new data dashboard that also includes a mapping tool that identifies all sources of toxic releases within a geographic area — failing to include trash incinerators within that new TRI tool will mislead communities into believing they are subject to fewer toxic releases than they actually are.[155]

C. Missing Toxic Release Data Has a Disproportionate Impact on Low-Income and Minority Communities

[152] 86 Fed. Reg. at 66,954; *see id.* at 66,961 ("For example, 41 NGP facilities are located in a three-mile radius of communities where the low-income indicator exceeds the 80th percentile."). The EPA's analysis showed significant number of nearby communities that merit EJ consideration due to poverty, percentage people of color, percentage of adults with less than a high school education, percentage that do not speak English "very well," and an average of low-income and people of color indicators. *See id.* at 66,961–66,962 (Table 1).
[153] U.S. Environmental Protection Agency, EJSCREEN, ejscreen.epa.gov/mapper/ (last visited Sept. 7, 2022).
[154] See EPA, EJSCREEN Technical Documentation 36, 53 (2019), www.epa.gov/sites/default/files/2021-04/documents/ejscreen_technical_document.pdf.
[155] And as already discussed above, third-party maps of pollution sources rely on TRI data as well.

TRI data gaps related to this petition hurt the people living near Waste Incinerators most. These people are disproportionately racial or ethnic minorities. The trash incineration industry in the U.S., as a whole, does not have a disproportionate impact by economic class, but has a strong environmental racism trend. While 67% of the nation's 68 remaining trash incinerators are located in majority white communities, the industry has a strong and disproportionate impact on people of color because the largest and dirtiest are located in communities where a majority of residents identify as Black, Indigenous, or People of Color (BIPOC). These communities tend to be more populated. Fifteen of the 20 largest trash incinerators (75%) are located in such communities. The environmental racism trend in this industry is found not by looking at how many incinerators are in communities of color, but when factoring in the number of impacted people living near them or the size of the incinerators. The 17 incinerators that are 2,000 tons per day (tpd) or greater have more capacity than the 51 incinerators that are under 2,000 tpd combined. On average, trash incinerators in majority BIPOC communities are surrounded by 2.5 times as many people and are twice as large as those in majority white communities: 27 facilities averaging 1,850 tons/day vs. 41 facilities averaging 909 tons/day. A populated-weighted analysis of large and small municipal waste combustors finds that Black residents are most disproportionately impacted by this industry.[156] A populated-weighted analysis of the eight large, commercial medical waste incinerators (not counting the three Covanta facilities that are primarily trash incinerators), finds even a far more stark disparity impacting Black residents of the U.S., as well as a strong correlation with low-income residents and residents living in

[156] Energy Justice Network, Incineration and Environmental Racism, updated Sept. 2022, www.energyjustice.net/incineration/ej.

poverty.[157] In fact, five of these eight medical waste incinerators are in communities where BIPOC residents are present in percentages above the national average, and these tend to be the more densely populated communities, where toxic releases likely will impact more people.

The EPA's failure to collect and publish Waste Incinerator data under the TRI therefore hits underprivileged groups the hardest, a disparity that is becoming worse over time — and the lack of data perpetuates an environmental injustice.

7. CONCLUSION

EPA has the authority to require Waste Incinerators to report their chemical releases to the TRI. By doing so, the EPA will improve public access to information about toxic releases in communities nationwide and advance the purpose of EPCRA. "The TRI data are a yardstick by which progress can be measured by industry and local communities and governments. These data enable all interested parties to establish credible baselines, to set realistic goals for environmental progress, and to measure progress in meeting these goals over time."[158] Without such a baseline for Waste Incinerator data, the mission of EPCRA and EPA's environmental justice mandates remain unsatisfied. The EPA should grant this petition and rapidly amend its regulations to include Waste Incinerators within the industries required to report toxic chemical releases within the TRI.

[157] Spatial Justice Test for Race and Income, Analysis of eight large commercial medical waste incinerators, www.spatialjusticetest.org/test/1668984211.html (in this analysis where the race ratio is greater than one, that group is disproportionately impacted).
[158] 61 Fed. Reg. at 33,589.