

June 28, 2023

SENT VIA ELECTRONIC MAIL

Greg Pirie, REHS
Marin County Environmental Health Services
3501 Civic Center Drive, Suite 236
San Rafael, CA 94903
safedrugin@marincounty.org

Re: Substantive Change Request – Approval of Disposal Facilities

Dear Mr. Pirie,

MED-Project LLC (“MED-Project”) is submitting this letter to the Environmental Health Services division of the Department of Marin County Community Development Agency (the “Department”) to petition to utilize municipal waste combustors for unwanted medicine disposal as an alternative method of disposal as part of the MED-Project Stewardship Plan for Unwanted Medicine from Households dated March 14, 2020, approved December 18, 2020 (the “Plan”) and other Plan modifications as discussed in the letter conclusion.

Under the County of Marin Safe Medicine Disposal Ordinance (the “Ordinance”), “[p]roposed changes to an approved Stewardship Plan that substantively alter plan operations, including, but not limited to... disposal facilities, must be approved in writing by the Director before the changes are implemented.” See Ordinance § 7.90.70.B). This request for approval is submitted pursuant at least 30 days prior to any change is scheduled to occur. Ordinance § 7.90.70.B. Section 7.90.90.C of the Ordinance permits the Director to approve the use of differing disposal technologies that provide “equivalent protection at lesser cost.” The Ordinance allows the Department to “exercise reasonable discretion to waive strict compliance with the requirements of this Chapter that apply to Producers in order to achieve the objectives of this Chapter.” See Ordinance § 7.90.060.F.

With these requirements and the objectives of the Ordinance in mind, MED-Project requests that the Department approve the use of any permitted municipal waste combustor for all Unwanted Medicine collected under the Plan. Municipal waste combustors provide equivalent protection of the public and environment as required by the Ordinance. In conjunction with this Substantive Change Request, MED-Project is providing the Department with a May 16, 2022 memorandum prepared by ERM (the “ERM Memorandum”) at the request of MED-Project which provides a comprehensive comparison of different disposal facility technologies, including hazardous waste incinerators, medical waste incinerators, and municipal waste combustors, and demonstrates that medical waste incinerators and municipal waste combustors provide equivalent protection including in the four categories required by the Ordinance: monitoring of any emissions or waste; worker health and safety; reduction or elimination

of air, water or land emissions contributing to persistent, bioaccumulative, and toxic pollution; and overall impact on the environment and human health¹.

1. The Use of Municipal Waste Combustors to Dispose of Unwanted Medicine Should be Approved Under § 7.90.90.C.

MED-Project proposes to use municipal waste combustors to dispose of unwanted medicine under Section 7.90.90.C of the Ordinance, because municipal waste combustors provide equivalent protection at lesser costs. Use of these municipal waste combustors would protect and preserve public and environmental health, consistent with the objectives of the Ordinance.

a. Approval of Municipal Waste Combustors for Disposal of Unwanted Medicine Will Provide Necessary Logistical Flexibility.

MED-Project has engaged multiple vendors to provide a comprehensive and reliable suite of services to the residents of the County of Marin, as ensuring the reliability and consistency of services requires using a variety of disposal facilities and vendors. For the disposal of unwanted medicine, MED-Project relies on Stericycle Specialty Waste Solutions, Inc. (“Stericycle”) and Covanta Environmental Solutions, LLC (“Covanta”) in order to ensure redundancy of services in case either vendor’s services are unavailable at any time, to control costs, to maintain flexibility, and to provide multiple options for the provision of these services. Stericycle and Covanta currently offer disposal of unwanted medicine at hazardous waste incinerators, medical waste incinerators, and municipal waste combustion facilities, but exclusive use of hazardous waste incinerator facilities for waste collected by the Marin Drug Takeback Program would limit the number of facilities available to MED-Project for the purposes described above and would increase costs as discussed further below. The special logistics required by the reverse distributors in order to ensure the waste collected from Marin is directed only to hazardous waste incinerator facilities creates additional complexity that can lead to logistical distribution discrepancies. Additionally, the limited capacity of the network of hazardous waste incinerator facilities is well documented which can cause unexpected cancellation of waste shipments by hazardous waste facilities, resulting in the potential for not meeting Drug Enforcement Administration requirements for the destruction of unwanted medicine within the required thirty-day time limit.²

¹ The May 16, 2022 Memorandum was prepared in response to a similar petition in a different jurisdiction, however all included information is relevant for this request. The memorandum provides summaries of the environmental, health, and safety protections in place at the municipal waste combustors that MED-Project currently uses for other programs. This is intended to demonstrate the controls typically in place at municipal waste combustors for the purpose of supporting MED-Project’s request for approval of the use of any municipal waste combustors as a disposal method for covered medicines, and is not meant to limit approval to these facilities.

² See, e.g., United States Environmental Protection Agency Memorandum dated August 10, 2021 from Director Carolyn Hoskinson, Re: Regulatory Options for Addressing [the Temporary Backlog of Containerized Hazardous Waste Needing Incineration](#).

b. Approval of Municipal Waste Combustors will Provide Significant Cost Savings.

The cost to dispose of unwanted medicine at hazardous waste incinerators is much greater than the cost to dispose of unwanted medicine at municipal waste combustors. In MED-Project's experience, hazardous waste incinerators typically charge significantly more than other incinerators to dispose of the same quantity of waste. Compliance, logistical feasibility, cost, and other considerations typically drive how MED-Project, and its vendors select disposal facilities, and MED-Project appreciates the flexibility to respond to those factors and others as it operates its program with a variety of disposal options.

c. Municipal Waste Combustors Provide Equivalent Environmental, Health and Safety Protections.

Municipal waste combustors protect and preserve public health, safety, and welfare. Municipal waste combustors are subject to a number of environmental permitting requirements, consistent with the Ordinance's underlying objective of protecting and preserving public health, safety and welfare. For example, the municipal waste combustors described below and in the ERM Memorandum have Title V air permits and have installed extensive pollution control techniques, including semi-dry flue gas scrubbers injecting lime, fabric filter baghouses, nitrogen oxide control systems, mercury control systems, and continuous emissions monitoring systems. The facilities identified are waste-to-energy facilities, which avoid the production of the greenhouse gas methane while producing electricity. Many of these facilities have also been recognized for their workplace safety achievements, as evidenced by their designation as VPP Star facilities. As outlined further in the ERM Memorandum, municipal waste combustors provide equivalent protection in each of the areas required by the Ordinance: monitoring of any emissions or waste; worker health and safety; reduction or elimination of air, water, or land emissions contributing to bioaccumulative, and toxic pollution, and overall impact on the environment and human health.

Below, we describe some of the environmental, health, and safety protections in place at the municipal waste combustors MED-Project currently proposes to use. These summaries are intended to demonstrate the controls typically in place at municipal waste combustors for the purpose of supporting MED-Project's request for approval of the use of any municipal waste combustor as a disposal method for unwanted medicine.

i. Covanta Indianapolis Facility

The Covanta Indianapolis Facility is a "waste-to-energy" facility that incinerates waste and generates up to 3.2 billion pounds of steam annually, providing 50% of the steam for downtown Indianapolis' heating loop.³ The Covanta Indianapolis Facility employs

³ See Covanta, Covanta Indianapolis, <https://www.covanta.com/where-we-are/our-facilities/indianapolis>⁴
See Covanta, Covanta Lancaster, <https://www.covanta.com/where-we-are/our-facilities/lancaster>

semi-dry flue gas scrubbers injecting lime, fabric filter baghouses, a nitrogen oxide control system, a mercury control system, and a continuous emissions monitoring system.

ii. Lancaster County Resource Recovery Facility

The Lancaster County Resource Recovery Facility in Pennsylvania (“Lancaster Facility”) is a permitted large municipal waste combustor. The Lancaster Facility is a “waste-to-energy” facility that incinerates waste and generates 33 megawatts per day from a condensing steam turbine.⁴ The Lancaster Facility employs semi-dry flue gas scrubber injecting lime, fabric filter baghouses, a furnace dry-lime inject system, a nitrogen oxide control system, a mercury control system, and a continuous emissions monitoring system.⁵ The Lancaster Facility operates under a Title V Clean Air Act permit and a solid waste permit. The Lancaster Facility is a “zero discharge” facility, meaning that the wastewater generated on-site is treated and reused in the waste management process, according to the facility’s website. The Lancaster Facility has been designated as a VPP Star facility by OSHA.

d. The Use of Municipal Waste Combustors for Disposal of Unwanted Medicine is Permitted under State and Federal Law and Approved by Numerous Jurisdictions.

There are no other laws or requirements, outside of the Ordinance, that would require MED-Project to dispose of unwanted medicine at a hazardous waste incinerator or preclude MED-Project from disposing of these materials at a municipal waste combustor. In fact, the U.S. Environmental Protection Agency (“EPA”) has issued a memorandum stating clearly that collected household pharmaceuticals are not subject to federal hazardous waste regulations and can be sent to large and small municipal waste combustors.⁶ Any unwanted medicine collected by MED-Project under this Plan is not regulated under state or federal hazardous waste regulations, and therefore are not required to be treated as hazardous waste. Under United States Drug Enforcement Administration and EPA requirements, municipal waste combustors permitted for household medical waste are authorized to take materials from all jurisdictions in the United States. MED-Project’s understanding is that this is common practice across the United States. California’s Pharmaceutical and Sharps Waste Stewardship law, SB 212, allows the use of municipal waste combustor technology for disposal of unwanted medicine. In addition, the disposal of unwanted medicine kiosk waste at municipal waste combustor facilities is approved in many other jurisdictions with product stewardship takeback laws, such as: The State of California, Alameda County, CA; Santa Barbara County, CA; San Luis Obispo, CA; City of Capitola, CA, City of Santa

⁴ See Covanta, Covanta Lancaster, <https://www.covanta.com/where-we-are/our-facilities/lancaster>

⁵ *Id.*

⁶ See Memorandum on Management of Household Pharmaceuticals Collected by Law Enforcement During Take-Back Events and Programs, from Barnes Johnson, Office of Resource Conservation and Recovery, to RCRA Division Directors, EPA Regions 1-10 (Sep 11, 2018).

Cruz, CA; City of Scotts Valley, CA; and the State of Washington. As demonstrated above, MED-Project disposes of unwanted medicine from other nearby jurisdictions at municipal waste combustors, and any variation in the county of Marin would disrupt the existing waste management network across MED-Project's programs.

2. Conclusion

For the above reasons, the Department should use its discretion under § 7.90.060.F of the Ordinance and approve the disposal of Unwanted Medicine at municipal waste combustors.

Therefore, MED-Project is requesting approval of the following Municipal Waste facilities.

- Indianapolis Resource Recovery Facility in Indiana, a.k.a. Covanta Environmental Solutions, LLC. 2320 S. Harding St., Indianapolis, IN 46221
- Lancaster County Waste to Energy Facility 1911 River Road, Bainbridge, PA 17502

MED-Project is updating information for the following disposal facility in Section X of the Plan.

- Veolia- Port Arthur 7665 Highway 73, Beaumont TX 77705 is no longer providing services for MED-Project.

The information in Attachment B provides a redline of the revised Plan Section X change that supplement and revise the corresponding section in Section X of the Plan.

MED-Project looks forward to continuing to work with the Department to operate the Plan. Please let me know if you have any questions about this letter.

Sincerely yours,



Dr. Victoria Travis, PharmD, MS, MBA
National Program Director
MED-Project LLC

CC: Tara Erfani, terfani@marincounty.org

Carly Williams, cwilliams@marincounty.org

Attachment A

May 16, 2022, ERM Combined Incinerator Memo Final

ERM

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Date 16 May 2022
Client Jim Wilson, P.E.
Lead Director, Legal and Compliance
Med-Project
Reference Project No. 0572758
Subject ERM Review of Select Municipal Waste Combustors, Medical Waste
Incinerators, and Hazardous Waste Incinerators



INTRODUCTION

ERM was contracted by MED-Project to complete a comparison of incineration technologies at eight facilities across six different factors: cost, logistics, monitoring of any emissions or waste, worker health and safety, reduction or elimination of air, water, or land emissions contributing to persistent, bio-accumulative, and toxic pollution, and overall impact on the environment and human health. The facilities included in this comparison are:

- Stericycle, a Hospital Medical Infectious Waste Incinerator (HMIWI) located in Warren, Ohio with one unit that has a maximum waste material feed rate of 6,720 tons per year¹;
- Covanta Indianapolis, a municipal waste combustor, located in Indianapolis, Indiana with three units that have a design capacity of 264,990 tons per year of municipal solid waste per unit¹;
- Covanta Lancaster, a municipal waste combustor, located in Lancaster, Pennsylvania with three units that can process up to 146,000 tons per year of municipal solid waste per unit¹;
- Covanta York, a municipal waste combustor, located in York, Pennsylvania with three units that can process up to a combined 490,560 tons per year of municipal solid waste¹;
- Heritage Environmental, a hazardous waste combustor located in East Liverpool, Ohio with one incineration unit that can treat a total of 88,000 tons per year of hazardous waste¹;
- Ross Incineration, a hazardous waste combustor located in Elyria, Ohio with one incineration unit that has a total maximum waste feed rate of 114,130 tons per year¹;
- Clean Harbors Aragonite, a hazardous waste combustor located in Dugway, Utah with one incineration unit that has a current permitted capacity of approximately 113,880 tons per year¹; and
- Veolia Port Arthur, a hazardous waste combustor located in Port Arthur, Texas with one incineration unit that is permitted to handle up to 150,000 tons per year¹.

¹ Information available from publicly available websites.

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A tabular format of the comparison is also included, attached to this memo in Appendix A.

COST

Stericycle indicated that the cost of medical waste incineration is averaging 2.8 times per pound lower than hazardous waste incineration². Municipal waste combustion is estimated to be 4 to 7 times less expensive than hazardous waste incineration on the east coast³.

LOGISTICS

All eight facilities accept Drug Enforcement Administration (DEA) controlled substances and non-RCRA pharmaceutical wastes collected at secure kiosks. Additionally, all of the facilities have indicated that there are no other limitations or prohibitions on specific medicine that they can handle.

Reverse distributed unwanted medicine boxes and liners must be sent to a DEA registered reverse distributor site before transfer to a destruction facility. For the purpose of this memo, it was assumed that all boxes and liners would be sent from San Francisco to the DEA registered reverse distributor site in Warren, Ohio before being sent to one of the eight destruction facilities. The Warren reverse distributor site is approximately 2,600 miles away from the San Francisco area; this mileage is accounted for in the greenhouse gas (GHG) calculations for all eight sites in the table in Appendix A.

The closest destruction facility is located in Warren, Ohio at the same location as the reverse distributor. The other seven facilities are located between 50 and 1,900 miles from the Warren, Ohio reverse distributor site, with the next closest facility, Heritage Environmental, being approximately 51 miles away and the furthest facility, Clean Harbors Aragonite, being approximately 1,835 miles away. Assuming diesel trucks are used to ship the waste, a Greenhouse Gas (GHG) emission factor of 3.64 pounds per mile travelled per vehicle, based on 2019 data from the EPA SmartWays Carrier Performance Rankings, was used to estimate GHG emissions associated with travel to each facility. Transportation to Stericycle Warren, the closest facility, would emit approximately 4.73 tons of CO₂e per one-way trip per vehicle.

Since as early as June 2021, many commercial hazardous waste incinerators have been unable to accept additional containerized hazardous waste designated for incineration due to a backlog at their facilities. This backlog has been caused by a number of factors, including labor shortages due to the COVID-19 pandemic, scheduled and unscheduled shutdowns due to maintenance and weather, and increased manufacturing and waste generation as the economy ramps up after the pandemic. EPA became aware of this problem and issued a memo titled "Regulatory Options for Addressing the Temporary Backlog of Containerized Hazardous Waste Needing Incineration" on August 10, 2021. A copy of this memo is included in Appendix D. Based on information collected by the EPA, the memo indicated that the backlog may not be fully resolved until the end of the first quarter of 2022.

Because of the backlog at hazardous waste incinerators and resulting extended storage requirements, it may be prudent for generators of non-hazardous wastes, which includes non-RCRA pharmaceuticals and non-hazardous DEA controlled substances, to avoid using hazardous waste incinerators. Facilities like municipal waste combustors and HMIWIs offer similar handling treatments for non-hazardous waste without adding to the backlog.

²Information provided in Stericycle draft letter to San Francisco Environment dated October 5, 2020.

³Information provided by Covanta in email dated January 27, 2021 to MED-Project at MED-Project's request.

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MONITORING OF ANY EMISSIONS OR WASTE

Air Emissions

Stericycle utilizes a selective non-catalytic reduction system (SNCR), condensing absorber scrubber, venturi scrubber, mist eliminator, and carbon bed adsorber to reduce air emissions. Stericycle did not provide a destruction and removal efficiency (DRE) of their combustion unit, as DRE is a measure relevant for the destruction of hazardous constituents, which is not applicable to their facility².

The air pollution control equipment at Covanta Indianapolis includes the SNCR, a spray dry absorber, fabric filter, mercury emission control system, and a dustmaster conditioning system. Covanta Indianapolis indicated that their combustion process has a 99.9% destruction of pharmaceuticals and personal care products, but did not provide the method of calculation or a measure of DRE for their combustion units⁴.

Covanta Lancaster uses a dry lime injection system, SNCR, activated carbon system, dry scrubber, and a baghouse to reduce air emissions. Air pollution control equipment at Covanta York includes a lime spray dryer absorber, a fabric filter, and an activated carbon injection system on each incinerator unit. Neither Covanta Lancaster nor Covanta York provided a measure of DRE for their combustion units. Similar to the Stericycle operation, none of the three Covanta facilities handles hazardous waste at their facility and DRE is not applicable per regulatory requirements⁵.

Emission control equipment used at Heritage Environmental includes an electrostatic precipitator, 4-stage wet scrubber, carbon injection system, and a spray dryer. The Heritage incinerator demonstrated a destruction and removal efficiency of 99.9999% using EPA Method 3000 during a performance test conducted in March 2020⁶.

Ross Incineration uses a cyclone separator, radial flow scrubber, gas-liquid contactor, and two electrostatic precipitators as part of their air pollution control equipment. The air permit held by Ross Incineration requires a 99.99% destruction and removal efficiency for each principal organic hazardous constituent. The permit requires a one-time DRE test and only requires a retest if the combustion system is modified such that the DRE could be impacted. Ross Incineration did not provide a tested destruction and removal efficiency of their combustion unit nor a method used for calculation⁵.

Clean Harbors Aragonite uses a spray dryer, baghouse, saturator, and wet scrubber to reduce air emissions from the incinerator. Based on information provided by Clean Harbors Aragonite, the incinerator demonstrated a 99.99999% DRE using SW-846 Method 0023A to sample train and SW-846 Method 8270 to analyze during its most recent performance test⁵.

Veolia Port Arthur control equipment includes a wet scrubber and wet electrostatic precipitator. A minimum of 99.99% DRE for organic hazardous constituents and 99.8% DRE for hydrogen chloride is required for the incinerator⁶.

The Table 1 below lists emission rates at each facility based on most recent actual test results of the incinerators at Stericycle, Covanta Indianapolis, Covanta Lancaster, Covanta York, and

⁴ Information provided from Covanta Indianapolis Title V permit dated November 4, 2019.

⁵ Information publically available on facility websites.

⁶ Information based on publically available documents in Ohio EPA's eDocument Search.

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Heritage Environmental. Ross Incineration did not provide actual emission rates for their facility. Table 2 lists the pollutant limitations for all eight facilities.

Table 1. Actual Emission Rates of Select Pollutants at Each Facility

Pollutant, units	Stericycle ⁷	Covanta Indianapolis ⁸	Covanta Lancaster ⁸	Covanta York ⁸	Heritage ⁵	Ross Incineration	Clean Harbors Aragonite ⁹	Veolia Port Arthur ⁹
Particulate, grains/dscf	0.0012	0.0027	0.0002	0.0003	0.001	Actual emission rates not provided. See Table 2 for pollutant limits.	0.0022	NA
Particulate, tpy	NA	NA	NA	NA	NA		NA	0.6084
Nitrogen Oxides, ppmv	117.7	143	142.3	119.3	NA		NA	NA
Nitrogen Oxides, tpy	NA	NA	NA	NA	72.96		108.07	107.23
Carbon Monoxide, ppmv	0.4	44.3	10.4	55.7	11		42.18	NA
Carbon Monoxide, tpy	NA	NA	NA	NA	NA		NA	0.6891
Sulfur Dioxide, ppmv	0.12	8.7	0.7	14.3	NA		11.35	0.25
Sulfur Dioxide, tpy	NA	NA	NA	NA	4.99		20.63	1.3271
Hydrogen Chloride, ppmv	0.0599	8.3	1.3	1.0	0.13		1.8	NA
Hydrogen Chloride, tpy	NA	NA	NA	NA	NA		NA	0.9080
Cadmium, mg/dscm	0.0002	0.0012	0.0002	0.0002	0.014		0.092	NA
Lead, mg/dscm	0.0019	0.0101	0.0031	0.0025			NA	0.0025
Cadmium & Lead, tpy	NA	NA	NA	NA	NA		NA	0.0025
Mercury, mg/dscm	0.0029	0.0007	0.0004	0.0008	0.014		0.046	NA
Mercury, tpy	NA	NA	NA	NA	NA		NA	0.0145
Total Dioxins/Furans, ng/dscm	0.0772	1.4	0.5	1.3	0.03		0.0069	0.099
TEQ Dioxins/Furans, ng/dscm	0.001	Not Provided	Not Provided	Not Provided	0.03		0.0069	0.0077

⁷ Information provided in draft Stericycle letter to San Francisco Environment dated October 5, 2020.

⁸ Information provided by Covanta in email dated December 3, 2020 to MED-Project at MED-Project's request.

⁹ Information provided by MED-Project in a spreadsheet dated December 21, 2021.

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Waste Generated

Ash generated at each facility is managed via landfilling.

Ash generated at Stericycle is sent to a non-hazardous (Subtitle D) landfill. Ash is sampled and analyzed quarterly for metals to ensure that it meets all governing regulations (e.g., does not exhibit a hazardous waste characteristic). On average, Stericycle produces approximately 1,300 tons of ash per year¹⁷.

Covanta Indianapolis uses advanced magnets and eddy current separators to remove ferrous and non-ferrous metals from the ash prior to disposal. Approximately one-third of the ash generated at Covanta Indianapolis is sent to a municipal solid waste landfill, where it is used as daily cover. The remaining ash is sent to an ash monofill, which is a non-hazardous landfill that contains only ash. Based on current operations, the amount of ash generated is equal to about 25% of the weight of the initial waste¹⁸.

At Covanta Lancaster, ferrous and non-ferrous materials are removed from the ash generated and recycled. The remaining ash is then taken to a nearby non-hazardous landfill and used as daily cover. Ash generated is equal to approximately 10% of the initial waste volume¹⁸.

Ash generated at Covanta York is sent next door to the Ash Recycling and Processing Facility (ARPF) for furthering processing. The ARPF uses a wet separation technology to increase the recovery of recyclable materials, including aggregates, metals, and sand from the ash. Any ash remaining after processing at the ARPF is managed at a landfill. Approximately 10% of the initial waste volume remains as ash for landfilling¹⁸.

Heritage Environmental generates waste salt and slag that is landfilled in a hazardous waste landfill. In 2019, the Heritage Environmental incinerator generated just over 18,000 tons of residuals that were disposed in an offsite hazardous waste landfill. The most recent biennial waste report from 2017 indicates that Heritage Environmental received approximately 53,700 tons of waste; the amount of ash generated is equal to about 33.5% of the weight of the initial waste received¹⁸.

Ross Incineration chemically solidifies the ash generated from the incinerator to bind metals into a concrete-like substance and then the solidified ash is disposed in an offsite hazardous waste landfill. No information was provided on the amount of residuals generated at Ross Incineration¹⁸.

Clean Harbors Aragonite and Veolia Port Arthur both send generated ash for landfilling at Subtitle C RCRA landfills. Clean Harbors Aragonite generated 20,074 tons of waste in 2020¹⁹. Veolia Port Arthur generated 2,100 tons of waste, including residuals that were shipped offsite¹⁹.

Water Emissions

Stericycle has onsite wastewater pretreatment, which includes a series of settling and separation tanks and filters. The pretreated wastewater is then discharged to a Publicly

¹⁷ Information provided in draft Stericycle letter to San Francisco Environment dated October 5, 2020.

¹⁸ Information provided from publically available websites.

¹⁹ Information provided by MED-Project in a spreadsheet dated December 21, 2021.

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Operated Treatment Works (POTW). Stericycle holds a permit with the POTW to discharge the pretreated wastewater. Any wastewater sludge generated is subject to metal testing and is sent to a landfill for disposal. On average, Stericycle produces approximately 48 tons of wastewater sludge annually²².

Sewage sludge is generated at Veolia Port Arthur from an onsite wastewater treatment plant that treats domestic sewage generated onsite, unrelated to the hazardous waste operations. The generated sludge is sent offsite; approximately 92 tons of wastewater sludge is produced annually.

The six remaining facilities, Covanta Indianapolis, Covanta Lancaster, Covanta York, Heritage Environmental, Ross Incineration and Clean Harbors Aragonite indicated that they do not discharge any wastewater during their operations.

WORKER HEALTH AND SAFETY

OSHA 300 logs for the past three years were provided for review for Stericycle, Covanta Indianapolis, Covanta Lancaster, Covanta York, and Heritage Environmental²⁰. Ross Incineration, Clean Harbors Aragonite, and Veolia Port Arthur did not provide OSHA 300 logs for review.

Stericycle had four recordable injuries between 2017 and 2018, with no recordable injuries in 2019. Covanta Indianapolis had two recordable injuries in 2017, with no recordable injuries in 2018 and 2019. Covanta Lancaster had no record injuries between 2017 and 2019. Covanta York had no recordable injuries in 2017 and 2019, with two recordable injuries in 2018. Heritage Environmental had eight recordable injuries over the past three years. The provided OSHA 300 logs are attached to this memo in Appendix B.

Covanta Indianapolis, Covanta Lancaster, Covanta York, Clean Harbors Aragonite, and Veolia Port Arthur all participate in the OSHA voluntary participation program (VPP); Covanta Indianapolis is part of the Indiana state VPP, while the other facilities participate at the federal level²¹. The results of the most recent self-audit were not provided for any of the facilities.

REDUCTION OR ELIMINATION OF AIR, WATER, OR LAND EMISSIONS CONTRIBUTING TO PERSISTENT, BIO-ACCUMULATIVE, AND TOXIC (PBT) POLLUTION AND OVERALL IMPACT ON THE ENVIRONMENT AND HUMAN HEALTH

Metrics identified to quantify the reduction or elimination of air, water, or land emissions contributing to PBT pollution include the Toxic Release Inventory (TRI) reporting results from the four approved and proposed facilities that completed TRI reporting for the past three years. EPA's Risk Screening Environmental Indicators (RSEI) scores for the past three years were compiled for the four approved and proposed facilities that complete TRI reporting as an indicator of the overall impact on the environment and human health. Neither Stericycle, Covanta Indianapolis, Covanta Lancaster, nor Covanta York completed TRI reporting for the previous three years, based on a review of the EPA's TRI databases²¹.

²⁰ OSHA 300 logs for Stericycle and Heritage provided in email dated November 12, 2020 to MED-Project at MED-Project's request OSHA 300 logs for Covanta facilities provided in emails dated November 5 and December 3, 2020 to MED-Project at MED-Project's request.

²¹ Information from publicly available websites.

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For the approved and proposed facilities that do not complete TRI reporting and do not have a RSEI score, alternative evaluation metrics for reduction or elimination of air, water or land emissions contributing to PBT pollution and overall impact on the environment and human health are required. In accordance with the April 30, 2021, request for additional information from the San Francisco Department of the Environment, a review of the underlying federal and state regulatory emission limits utilized as a basis for permitting of different types of Waste Incinerators/Combustors was performed in an effort to compare the level of emission control required for air emissions. This evaluation can be utilized as a relative assessment of operational requirements to control emission of certain regulated persistent, bio-accumulative, and toxic (PBT) constituents from each facility type, as well as represent overall impact on the environment and human health.

Toxic Release Inventory Reporting Results

As mentioned above, four of the eight facilities discussed in this memo do not complete TRI reporting.

The Stericycle facility has determined that it is not subject to TRI reporting, as it does not meet the required reporting criteria. Stericycle states that it does not manufacture, process, or use any chemicals that are found on the TRI List of Chemicals. Additionally, Stericycle's NAISC code (562213) only triggers TRI reporting for facilities that either take hazardous waste or are RCRA Subtitle C facilities, neither of which criteria applies to Stericycle.²² Covanta did not provide information regarding the applicability of TRI reporting for any of its three facilities.

Ross Incineration, Heritage Environmental, Clean Harbors Aragonite, and Veolia Port Arthur reported releases of nine different PBT chemicals and four different PBT chemical categories from their respective facilities between 2017 and 2019²¹.

Risk-Screening Environmental Indicators

EPA's Risk-Screening Environmental Indicators (RSEI) utilizes information from TRI data to determine a numeric score representing a potential for chronic human health risk. These RSEI can be used as a factor for determining overall impact on the environment and human health. Four of the facilities included in this memo, Stericycle, Covanta Indianapolis, Covanta Lancaster and Covanta York do not report for TRI and therefore, do not have a RSEI score²¹. Veolia Port Arthur had the highest RSEI score of the facilities that do report for TRI for all three years between 2017 and 2019. RSEI scores for the TRI reporting facilities are listed in Appendix A.

Permit Review Methodology

For the approved and permitted facilities that do not complete TRI reporting and therefore do not have an RSEI score, a review of the air permitting at each type of facility was completed as an alternative to quantify reduction or elimination of emissions contributing to PBT pollution and as an indicator of overall impact on the environment and human health.

The review utilized three permits as representative examples of each of the three types of facilities presented in ERM's prior comparison dated March 8, 2021. This included Hospital Medical Infectious Waste Incinerators (HMIWI) [40 CFR Part 62, Subpart HHH], Hazardous Waste Incinerators [40 CFR Part 61, Subpart C; 40 CFR Part 63, Subpart EEE, and Ohio State Regulations from Ohio Administrative Code (OAC) 3745-31-05(A)(3)] and Large

²² Information provided in draft Stericycle letter to San Francisco Environment dated October 5, 2020.

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Municipal Waste Combustors [40 CFR Part 60 Subpart Eb and Pennsylvania Code 25 Pa. Code §127.441. Each type of facility evaluated is subject to Federal emission standards which provide a ceiling for operational emissions. Because these standards are applied across the facility type, relative comparison of the required emission limitation requirements of a representative facility within each type can be used to assess the control of certain types of PBT emissions for each overall type group.

The HMIWI emission limits reviewed were for the Large HMIWI (N001, Incinerator) under 40 CFR Part 62 Subpart HHH at the Stericycle Inc. facility in Ohio (Facility ID: 0278080634; Permit Number: P0128242).

The Hazardous Waste Incinerator (N001, Hazardous Waste Incinerator) emission limits reviewed were for the Heritage Thermal Services facility in Ohio (Facility ID: 0215020233; Permit Number: P0128768). The facility is regulated under 40 CFR Part 63, Subpart EEE as an existing source; under 40 CFR Part 61, Subpart C; and also, under (OAC) 3745-31-05(A)(3). These limits provide the regulatory required floor for operations of the facility. Additional facility specific operational requirements established during performance testing also are used in compliance.

The Municipal Waste Combustor emission limits reviewed for the Lancaster County Solid Waste Management Authority Susquehanna Resource Management Complex facility in Pennsylvania (Title V Permit No: 22-05007). This is a large category existing facility which operates under 40 CFR Part 60 Subpart Eb (For affected facilities that commenced construction, modification, or re-construction after September 20, 1994, and on or before December 19, 2005) and also under Pennsylvania Code 25 Pa. Code §127.441.

Regulatory Emission Limit Comparison

A short summary of the emission limits comparison is shown in the following table with the most stringent regulatory emission rates highlighted in red; a more detailed summary is provided in Appendix C.

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Table 3. Regulatory Emission Limits for each type of Facility

Incinerator Category		HMIWI	Hazardous Waste Incinerator	Municipal Waste Combustor
Construction Date		On or before December 1, 2008		Constructed commenced after September 20, 1994 or modified or reconstructed after June 19, 1996
Sub-Category**		Large	Existing Sources	Facilities that commenced construction, modification, or reconstruction after September 20, 1994, and on or before December 19, 2005
Air Emission Rates of Selected Pollutants	Particulate, mg/dscm	25	29.75	24
	Carbon Monoxide ³ , ppmv	11	100	100
	Dioxins/furans, ng/dscm total dioxins/furans (ng/dscm TEQ)	9.3 (0.054)	--(0.2)	13--
	Hydrogen chloride ⁴ , ppmv	6.6	32	25
	Sulfur Dioxide, ppmv	9	11.34 (lb/hr)	30
	Nitrogen Oxides, ppmv	140	28.36 (lb/hr)	135 ⁵
	Lead ¹ , mg/dscm	0.036		0.166
	Cadmium ¹ , mg/dscm	0.0092	0.23	0.0158
	Mercury, mg/dscm	0.018	0.13	0.08
	Beryllium, g/24hr	---	10.0	---
	Beryllium ² , mg/dscm	---		0.0002
	Arsenic ² , mg/dscm	---	0.092	0.0072
Chromium ² , mg/dscm	---		0.0023	
Citations		40 CFR Part 62, Subpart HHH	40 CFR Part 61, Subpart C (Beryllium); 40 CFR Part 63, Subpart EEE; OAC rule 3745-31-05(A)(3)	40 CFR Part 60, Subpart Eb; 25 Pa. Code §127.441

**All concentration based emission limits are corrected to 7 percent oxygen on a dry basis

¹For hazardous waste incinerators, the emission limit is for the combined emissions of cadmium and lead [40 CFR 63.1219(a)(3)].

²For hazardous waste incinerators, the emission limit is for the combined emissions of arsenic, beryllium, and chromium [40 CFR 63.1219(a)(4)].

³For hazardous waste incinerators, if complying with 100 ppmv CO, you must document that during the DRE test runs hydrocarbons do not exceed 10 ppmv during runs. Otherwise, the facility must comply with a 10 ppmv hydrocarbon limit.

⁴For hazardous waste incinerators, the emission limit is for hydrogen chloride and chlorine gas (total chlorine) expressed as a chloride (Cl-) equivalent.

⁵Limit is voluntary limit for emission netting purposes.

The focus of this review on larger existing systems provides a realistic comparison of national waste handling capabilities regarding the overall impact on environment and human health. As noted in Appendix C, there are sub-categories for some of the regulations for existing and newly constructed facilities, and for some combustor types different requirements are based on capacity (small, medium, and large). Most waste combustion systems currently operating and available for use are existing facilities due to the general difficulty in obtaining permits for new facilities. In general, the new facilities have somewhat lower regulatory emissions criterion (e.g., the Stericycle facility in Warren Ohio), and smaller systems have higher emission allowances. Large facilities are generally preferable for national scope programs due to capacity, and their higher feed rates generally allow for more consistent operations. Consistent operations typically result in better performance and this is reflected in the lower emission rates codified in regulation for that category.

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Data Observations

Although the different combustion systems manage different waste inputs, control and limitation requirements are required for similar classes of PBT air emission constituents. These include dioxin/furans, metals, acid gas, along with indicators of combustion efficiency such as carbon monoxide, particulates, and nitrogen oxides. The overall goal of these requirements is to establish and maintain conditions within the facility that result in destruction of the waste materials and minimize to the extent practical toxic emissions. However, the rate of allowed emission does vary to an extent between waste streams and facility type.

In general, the HMIWI reviewed has the most stringent emission limits based on applicable regulations noted in the facility permits, as can be seen in the table above. For the pollutants where the HMIWI regulations are not the most stringent they are extremely close to the next most stringent facility, which is the Municipal Waste Combustor. The least stringent regulatory emission limits reviewed were for the Hazardous Waste Incinerator. Based upon these regulatory comparisons, the combustor types that would typically be the most limiting of air emissions from combustion of waste would be the HMIWI and Large Municipal Waste Combustors.

However, beyond this focused comparison of regulatory detail, the capability of each category of waste combustor to effectively manage PBT constituents is a function of its technical configuration and operation. The larger combustion systems are able to incorporate and operate comprehensive emission control trains and their scale of operation tends to even out irregular waste streams providing consistent operational conditions. When evaluating HMIWI, municipal waste combustors, and hazardous waste incinerators, the individual operational scale, conditions, configurations, and compliance history are likely as informative of the ability of a facility to control PBT constituents as the regulatory class. A larger capacity well configured and operated facility in any of the three combustor classes evaluated should be effective for household medicine returns and medical waste destruction and provide for PBT management.

Attachment B

X. Vendor, Carrier, Transporter, Reverse Distributor, Transfer, and Disposal Facility Information

D. Disposal Facility

Name	Address	Phone	Website	Type
Indianapolis Resource Recovery Facility in Indiana, a.k.a. Covanta Environmental Solutions, LLC.	2320 S Harding St., Indianapolis, IN 46221	(317) 634-7367	www.covanta.com	Municipal Waste Combustor
Lancaster County Waste to Energy Facility	1911 River Road, Bainbridge, PA 17502	(717) 397-9968	www.lcswma.org	Municipal Waste Combustor