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In reply, please refer to:  
File:

**Testimony COMMENTING on SB2101  
RELATING TO HEALTH**

SENATOR JOY A. SAN BUENAVENTURA, CHAIR  
SENATE COMMITTEE ON HEALTH AND HUMAN SERVICES

SENATOR MIKE GABBARD, CHAIR  
SENATE COMMITTEE ON AGRICULTURE AND ENVIRONMENT

Hearing Date: 2/9/2024

Room Number: 224

1 **Fiscal Implications:** This measure may impact the priorities identified in the Governor's  
2 Executive Budget Request for the Department of Health's (Department) appropriations and  
3 personnel priorities. Proposed requirements will require additional staff time, effort, and  
4 funding.

5 **Department Testimony:** The Department provides the following comments on this measure  
6 that proposes to require, among many other things, that the Honolulu Program of Waste Energy  
7 Recovery (H-POWER) municipal waste combustor (MWC) facility develop a plan to implement  
8 continuous emissions monitoring systems (CEMS) or continuous automated sampling if a CEMS  
9 is not available, for 23 pollutants and for the Department to establish new permit limits. The bill  
10 recognizes that CEMS are already being used for monitoring four of the listed pollutants and we  
11 would add that annual source performance tests (aka "stack tests") are done for 15 pollutants.  
12 We recommend that the Legislature consider allowing the U.S. Environmental Protection  
13 Agency (EPA) rules on MWC to be finalized before imposing new state requirements to avoid  
14 the possibility of having state requirements that conflict with, or are less stringent than, federal  
15 regulations.

16 The primary technical justification for the proposed additional monitoring and sampling in  
17 the bill is that annual stack testing greatly underestimates emissions that are observed using  
18 continuous emissions monitoring. The bill points to three studies that observed several MWC

1 facilities' actual emissions levels throughout the year that were much higher than those measured  
2 from annual stack tests. The implication is that either the EPA's practice of specifying stack test  
3 methodology to demonstrate compliance is insufficient and does not provide a representative  
4 indication of compliance throughout the year or that although stack tests work properly MWC  
5 facilities are able to increase emissions the other 364 days of the year when not being tested. We  
6 do not see evidence of that in Hawaii.

7 The Department recognizes the potential value of collecting and sharing data at a greater  
8 frequency, i.e., continuously rather than annually, and for more pollutants. However, among the  
9 reasons we do not believe the stack tests are unrepresentative of emissions throughout the year, is  
10 that for the handful of MWCs that have implemented CEMS or continuous sampling for a few of  
11 the listed pollutants, two separate facilities in Florida that adopted CEMS for mercury were  
12 allowed by the Florida Department of Environmental Protection to discontinue operating their  
13 CEMS because levels did not significantly differ from those obtained in stack tests.

14 Moreover, in 2023, the EPA completed an intensive five-year review of large MWC units  
15 and is now proposing new rules. The proposed rules address several issues mentioned in the bill  
16 including imposing more stringent emissions limits for cadmium, lead, mercury, dioxins/furans,  
17 hydrogen chloride, particulate, sulfur dioxide, and nitrogen oxides. In the proposed rules EPA  
18 leaves the use of CEMS for additional pollutants as optional rather than mandatory, and only  
19 after performance specifications for these CEMs are promulgated. Performance specifications  
20 evaluate the acceptability of the installed CEMS at the time of installation or soon after.

21 EPA is the agency that has the responsibility, experience, and resources to develop stationary  
22 source air pollution standards, which includes monitoring techniques and emission limits. In its  
23 recent 5-year review of large MWCs, EPA would have evaluated the type of evidence and  
24 conclusions that are found in the three studies and considered the need to correct any  
25 shortcomings of stack tests and address the potential for emissions to vary throughout the year.

26 Regarding the question of whether MWC facilities generate excessive emissions during  
27 periods outside of stack tests, we do not see evidence of this at H-POWER. Prior to  
28 construction, the facility was subjected to Prevention of Significant Deterioration (PSD) review,  
29 which imposes the most onerous and stringent requirements among categories of air permits.  
30 Permit conditions developed based on PSD review do not allow H-POWER to operate unfettered

1 on the 364 non-stack test days of the year. PSD permit evaluations consider the worst case  
2 scenario including the source's maximum potential to emit, the requirement for air emissions  
3 modeling to ensure compliance with ambient air quality standards, and performance of risk  
4 assessments prior to permit issuance as well as post construction ambient air quality monitoring  
5 while a source is in operation to ensure air quality impacts do not endanger public health.

6 Actual data suggests that emissions from H-POWER typically are within the permitted  
7 limits. In the past 5 years, the facility has not received any formal notice of violation for air-  
8 related issues from the Department.

9 Furthermore, ambient air monitoring data shows that the air quality in the surrounding areas  
10 is good:

- 11 1) The Department's federally-mandated National Core (NCore) ambient air monitoring  
12 station located approximately 1.6 miles from H-POWER, between the facility and the  
13 neighboring Kapolei community, does speciation for fine particulate matter. This  
14 includes data for nine pollutants identified in the bill (cadmium, lead, mercury, arsenic,  
15 hexavalent chromium, manganese, nickel, selenium, and zinc). Sampling is collected  
16 once every three days for about 122 samples per year.
- 17 2) In 2013, post-construction ambient air monitoring was performed in the immediate  
18 vicinity of the H-POWER facility. Continuous monitoring was performed for seven of  
19 the pollutants identified in the bill: arsenic, cadmium, lead, manganese, mercury, nickel,  
20 and selenium.

21 Evaluation of the data indicates that concentrations of hazardous air pollutants (zinc is not a  
22 hazardous air pollutant) from both the ongoing NCore station and the 2013 post-construction  
23 ambient air monitoring were below the significant ambient air concentration as defined in HAR  
24 §11-60.1-179 for these pollutants (i.e., no ambient air concentrations were high enough to  
25 endanger human health).

26 The stated purpose of the bill is to "implement continuous monitoring and continuous  
27 sampling technologies that have been tested and verified by the United States Environmental  
28 Protection Agency at waste combustion facilities..." The Department has found that, aside from  
29 the four pollutants already being monitored by CEMS, two other pollutants listed in the bill meet  
30 this requirement: mercury and hydrogen chloride. Other methods exist for some of the

1 remaining pollutants, but we are not aware of EPA performance specifications or approvals for  
2 the use of these methods, or their proven applicability at an MWC. EPA performance  
3 specifications are necessary for evaluating the quality and acceptability of the data gathered by  
4 the CEMS and continuous automated sampling systems. Utilizing methods that do not have  
5 performance specifications or EPA approval may bring into question the quality and defensibility  
6 of the data, which is critical in compliance determinations and enforcement actions. Moreover,  
7 in their proposed rules, the EPA is already evaluating the optional use of CEMS for certain  
8 pollutants, but notes that it must be reinvestigated as to whether the use of CEMS for compliance  
9 testing requires EPA to adopt alternative emission limits. In the proposed rule, EPA is  
10 evaluating what alternative emission limits and averaging times would be appropriate for  
11 compliance with CEMS. The bill's requirement to have the Department develop permit limits  
12 based on continuous monitoring or sampling when EPA is already evaluating revised limits and  
13 averaging periods, is duplicative, and could result in imposing potentially conflicting or multiple  
14 emission limits for the facility.

15 Finally, we wish to share that the cost to purchase a CEMS unit is estimated to be  
16 \$100,000 to \$200,000 for a single pollutant and would be needed for each of the three stacks.  
17 Operation and maintenance costs would be additional.

18 As stated above, we recommend that the Legislature consider allowing the EPA rules to be  
19 finalized before imposing new state requirements. The reasons to allow EPA's rules to be  
20 finalized include: the continuous monitoring methodologies are still in development; there are  
21 only a limited number of performance specifications that have been developed and without  
22 adequate performance specifications, data quality cannot be ensured; and EPA is currently  
23 evaluating the optional use of CEMS and alternative emissions limits when using CEMs instead  
24 of stack testing.

25 **Offered Amendments:** None

26 Thank you for the opportunity to testify.

**SB-2101**

Submitted on: 2/8/2024 11:48:39 AM

Testimony for HHS on 2/9/2024 1:00:00 PM

| <b>Submitted By</b> | <b>Organization</b>              | <b>Testifier Position</b> | <b>Testify</b>    |
|---------------------|----------------------------------|---------------------------|-------------------|
| Dave Mulinix        | Testifying for Greenpeace Hawaii | Support                   | Remotely Via Zoom |

Comments:

Aloha Chair, Vice Chair, & Committee Members,

On behalf of Greenpeace Hawaii we stand in Support of SB2120 that requires waste combustion facility owners to implement continuous monitoring and sampling technologies for the purposes of collecting data regarding emissions. Establishes a publicly available website hosted by the Department of Health that will track and display data collected on emissions. Requires the DOH to adjust permit limits for air contaminants based on emissions data collected. Requires reports to the legislature. Declares that the general fund expenditure is exceeded. Makes an appropriation.

Continuous monitoring at waste combustion facilities is essential to protect the health and safety of our families and the environment.

Please vote for SB2120.

Mahalo,

Dave Mulinix, CoFounder & Statewide Organizer

Greenpeace Hawaii

**Comments before  
February 9, 2024 House HHS/AEN  
Joint Committee Hearing**

**SUPPORTING WITH AMENDMENTS**

**Senate Bill 2101**

Relating to Incinerator Monitoring

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Aloha Honorable Committee members. Energy Justice Network is a national organization supporting grassroots groups working to transition their communities from polluting and harmful energy and waste management practices to clean energy and zero waste solutions. In Hawai'i, we've been working with residents who first sought our support in 2015. Since mid-2022, we have supported residents in forming the Hawai'i Clean Power Task Force and Kokua na Aina to address numerous energy and waste issues in the state.

We emphatically support the continuous monitoring of air emissions from waste incinerators, since we currently lack the data on what the community around H-POWER is truly being exposed to. Nine of the dangerous pollutants covered by this bill are not required to be monitored at all. Another nine pollutants are tested just once a year under optimal operating conditions, underestimating the actual emissions.

Continuous monitoring shows actual emissions are higher than we're led to believe. At Covanta Delaware Valley, the nation's largest waste incinerator, located in Chester, PA, they continuously monitor hydrochloric acid (HCl) emissions. This data shows that HCl emissions are 62% higher than annual stack tests show. At incinerators in Europe, studies using continuous sampling have found that air emissions of the most toxic chemicals known to science – dioxins and furans – are 30 to 1,300 times higher than annual stack tests show.

In order to harmonize this bill with House Bill 2123, which was approved through the EEP Committee and amended to largely match this bill's companion, HB 2796, we encourage that it be amended to cover air monitoring at landfills as well as incinerators, but subject to a more limited number of pollutants, as determined by what the Department of Health deems to be appropriate.

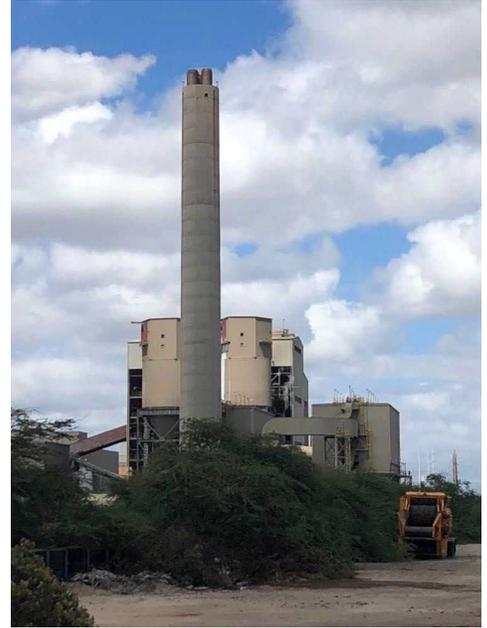
Please find attached a factsheet on the bill, as well as our response to issues raised by the Department of Health on an earlier draft of this bill.

Mahalo nui loa for your support for this important matter!

# Continuous Monitoring of Air Pollution from Waste Incineration

The H-POWER trash incinerator on O‘ahu, located in Campbell Industrial Park in Kapolei, is one of the largest waste incinerators in the nation, capable of burning up to 2,608 tons of waste per day. It is also one of the largest industrial air polluters in the state, according to data reported to the state Department of Health. Two of the three burners at H-POWER (the old ones that started up in 1989) are missing two of the four pollution control systems commonly used at trash incinerators. One of these is the carbon injection system that transfers highly toxic dioxins/furans and mercury from air to the ash.

Like Hawai‘i, the state of Oregon has only one trash incinerator, also operated by Covanta, though the H-POWER incinerator on O‘ahu is nearly six times larger. In August 2023, Oregon’s governor signed Senate Bill 488 into law, making it the first state to require the continuous monitoring of toxic dioxins, PCBs, and various heavy metals emitted from a trash incinerator. Normally, these are tested just once a year.



If we regulated speeding the way we monitor air emissions of most chemicals from industrial smokestacks, motorists would be permitted to drive around all year with no speedometer. Once a year, a speed trap would be set on the highway with signs warning “slow down... speed trap ahead,” and the driver’s brother would be running the speed trap (companies choose who to pay to run the test, and prepare for the test ahead of time).

Only four air contaminants released by H-POWER are monitored on a continuous basis, while another ten are tested just once per year; others, not at all. None of the toxic chemicals released by H-POWER are monitored continuously. Technology, tested and verified by EPA in 2006, exists to continuously monitor dozens of air pollutants, including many toxic chemicals known to be released from incinerators.

Once-a-year testing can drastically underestimate actual emissions. Data from incinerators where continuous emissions monitors have been used show that actual emissions can be far higher than what self-administered, annual stack tests show. In part, this is because the state requires testing during optimal operating conditions, not during startup, shutdown, and malfunction times, when certain emissions are known to be much higher. Hydrochloric acid, one of the major pollutants released by trash incinerators, has been found by continuous monitoring at the nation’s largest waste incinerator (also a Covanta plant) to be 62% higher than what annual stack tests (the only kind used at H-POWER) indicate. Dioxins and furans, the most toxic chemicals known to science, have been shown in European studies to be released in amounts 30 to 1,300 times higher than we’re led to believe in the U.S. when testing once a year.

The Incinerator Air Pollution Right-to-Know Act ([SB 2101](#)) would currently only apply to H-POWER facility, and would require continuous emissions monitoring and real-time reporting to a public website of over 20 chemical contaminants from waste incinerators in the state. Where truly continuous testing technology is not commercially available, the bill allows continuous *sampling* to be used, which means that, instead of a constant read-out of emissions levels, a sampling cartridge collects a sample for up to four weeks and that sample is then replaced and sent to a lab to find out the results, providing year-round coverage.

Learn more in our [response to the Department of Health’s memo on the bill.](#)

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The Clean Power Task Force seeks a rapid, just transition of Hawaii’s energy system, halting Hawaii’s contributions to climate warming and air pollution through the use of 100% zero-emission, renewable energy sources, by raising public awareness and impacting public policy through scientific and Indigenous knowledge.

# Frequency of air emissions testing at the H-POWER trash incinerator's three burners

## Status quo vs. proposed Incinerator Air Pollution Right-to-Know Act (SB 2101)

| Chemical   | Abbreviation                                       | Testing frequency (status quo)           | Proposed bill        | Category                   |
|--|--|--|----------------------|----------------------------|
| Sulfur dioxide   | SO <sub>2</sub>                                    | Continuous                               | Continuous           | Criteria air pollutant     |
| Nitrogen oxides  | NO <sub>x</sub>                                    | Continuous                               | Continuous           | Criteria air pollutant     |
| Carbon monoxide  | CO   | Continuous                               | Continuous           | Criteria air pollutant     |
| Carbon dioxide   | CO <sub>2</sub>                                    | Continuous                               | Continuous           | Greenhouse gas             |
| Ammonia  | NH <sub>4</sub>                                    | Annual                                   | Continuous           | Released via NOx controls  |
| Dioxins/Furans   | 2,3,7,8-TCDD TEQs                                  | Annual                                   | Continuous **        | Highly toxic organohalogen |
| Polychlorinated biphenyls  | PCBs   | Never                                    | Continuous **        | Highly toxic organohalogen |
| Per- and polyfluoroalkyl substances  | PFAS   | Never                                    | Continuous **        | Highly toxic organohalogen |
| Polycyclic aromatic hydrocarbons   | PAHs   | Never                                    | Continuous **        | Toxic hydrocarbons         |
| Volatile organic compounds   | VOC  | Annual                                   | Continuous           | Toxic hydrocarbons         |
| Hydrogen chloride (Hydrochloric acid)                                      | HCl  | Annual                                   | Continuous           | Acid gas                   |
| Hydrogen fluoride (Hydrofluoric acid)                                      | HF   | Annual                                   | Continuous           | Acid gas                   |
| Arsenic  | As   | Never                                    | Continuous           | Toxic metal                |
| Beryllium  | Be   | Annual                                   | Continuous           | Toxic metal                |
| Cadmium  | Cd   | Annual                                   | Continuous           | Toxic metal                |
| Chromium (VI)  | Cr (VI)  | Never                                    | Continuous           | Toxic metal                |
| Lead   | Pb   | Annual                                   | Continuous           | Toxic metal                |
| Manganese  | Mn   | Never                                    | Continuous           | Toxic metal                |
| Mercury  | Hg   | Annual                                   | Continuous           | Toxic metal                |
| Nickel   | Ni   | Never                                    | Continuous           | Toxic metal                |
| Selenium   | Se   | Never                                    | Continuous           | Toxic metal                |
| Zinc   | Zn   | Never                                    | Continuous           | Toxic metal                |
| Opacity (darkness of emissions; an indirect measure of particulate matter) |  | Continuous                               | (unaddressed)        | Particulate matter         |
| Total particulate matter (filterable)                                      | PM-FIL   | Annual                                   | Continuous           | Particulate matter         |
| Coarse particulate matter (filterable)                                     | PM <sub>10</sub> -FIL                              | None (Units 1-2); Annual (Unit 3)        | Continuous           | Particulate matter         |
| Fine particulate matter (filterable)                                       | PM <sub>2.5</sub> -FIL                             | None (Units 1-2); Annual (Unit 3)        | Continuous           | Particulate matter         |
| Total particulate matter (filterable and condensable)                      | PM-PRI (PM Primary)                                | None (Units 1-2); Annual (Unit 3)        | (unaddressed)        | Particulate matter         |
| Coarse particulate matter (filterable and condensable)                     | PM <sub>10</sub> -PRI (PM <sub>10</sub> Primary)   | Estimates * (Units 1-2); Annual (Unit 3) | (unaddressed)        | Particulate matter         |
| Fine particulate matter (filterable and condensable)                       | PM <sub>2.5</sub> -PRI (PM <sub>2.5</sub> Primary) | Estimates * (Units 1-2); Annual (Unit 3) | (unaddressed)        | Particulate matter         |
| <b>TOTALS OF ACTUAL POLLUTANTS MEASURED</b>                                |  | <b>4 Continuous + 10 Annual ***</b>      | <b>23 Continuous</b> |                            |

Note: those listed as "(unaddressed)" in the bill would continue to be monitored as current permits require.

\* Unit one estimates these two types of particulate matter using "Engineering judgment" and Unit two with "USEPA Speciation Profile."

\*\* Would likely need to be tested with continuous sampling. Instead of having real-time data, a long-term sampling cartridge would be switched out every 14 days to be tested at a lab.

\*\*\* Opacity is not a true measure of particulate matter and is not counted as a pollutant, itself. The different sizes (grades) of particulate matter are counted only once here.

# Incinerator Air Pollution Right-to-Know bill

## A response to Hawai'i Department of Health Clean Air Branch

by

Mike Ewall, Esq., Energy Justice Network

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**BACKGROUND:** In the 2024 legislative session, Senator Mike Gabbard has introduced the [Incinerator Air Pollution Right-to-Know bill](#) (SB 2101). The bill is based largely on Oregon's [Senate Bill 488](#) of 2023, where Oregon became the first state requiring a trash incinerator to use modern technology to continuously monitor for toxic chemicals and other pollutants that are typically not monitored at all, or are tested just once a year under optimal operating conditions that understate actual emissions.

On 10/30/2023, the Hawai'i Department of Health Clean Air Branch (DOH-CAB) drafted a nine-page review of the bill. This review provides some good background information and context, but also contains some statements to which this response provides some clarification. The DOH review is printed verbatim below on pages 3 to 19, set side-by-side with our response for ease of reviewing both. A chart from our [factsheet](#), comparing current vs. proposed monitoring requirements, is attached on page 20.

**WHY CONTINUOUS MONITORING?** At trash incinerators throughout the U.S., only three pollutants are required to be monitored on a continuous basis (NO<sub>x</sub>, SO<sub>2</sub>, and CO). Carbon dioxide (CO<sub>2</sub>), the global warming pollutant, is often monitored continuously at larger incinerators, as are various parameters like oxygen, temperature, and opacity (darkness of air emissions). In rare other cases, additional pollutants are monitored continuously (see examples on next page).

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<sup>1</sup> In Connecticut, Covanta was fined \$20,000 in 1993 in a civil action filed by the state Attorney General in response to an employee adjusting a continuous emissions monitoring device to alter a reading in order to pass a continuous emissions monitoring audit. In Tulsa, Oklahoma in 2013, Covanta was the target of a criminal investigation by the U.S. Attorney's Office "related to alleged improprieties in the recording and reporting of emissions data" in which Covanta entered into a non-prosecution agreement to follow applicable laws and regulations and pay a \$200,000 "community service payment" to the state environmental

Other pollutants, if monitored at all, are typically tested once per year, and sometimes less frequently. If we regulated motorists the way we do most pollutants from smokestacks, it would be akin to enforcing a speed limit by allowing drivers to drive all year with no speedometer. Once a year, a speed trap would be set on the highway with signs warning "slow down... speed trap ahead," and the driver's brother would be running the speed trap (companies choose who they pay to conduct the test). Some incinerator operators have also been known to manipulate emission testing to present lower emissions levels to regulators.<sup>1</sup>

**UNDERESTIMATING POLLUTION:** Testing just once a year underestimates actual pollution levels. An analysis of seven years of data from the nation's largest trash incinerator, Covanta Delaware Valley in the City of Chester, Pennsylvania, where they monitor hydrochloric acid continuously as well as once per year in an annual stack test, the continuous monitors show actual emissions to be 62% higher than annual stack tests show.

Increased downtime at aging incinerators results in higher emissions from startup and shutdown occurrences. Dioxin emissions are a stark example. One study out of Europe found that using continuous sampling for dioxins at incinerators found the actual emissions to be 32-52 times higher than we think they are in the U.S. when requiring incinerators to test each unit just

agency. For the Connecticut incident, see page 37 for this 1993 incident reported in this 93-page compilation of Covanta's U.S. violations through September 2006: [www.energyjustice.net/files/incineration/covanta/violations2006.pdf](http://www.energyjustice.net/files/incineration/covanta/violations2006.pdf). For Tulsa, see Covanta Holding Corporation's 2019 10-K Securities and Exchange Commission filing, p. 105. (see "Tulsa Matter" describing the consequences of this 2013 incident) [d18rn0p25nwr6d.cloudfront.net/CIK-0000225648/992dfb7f-398d-4b17-8e33-75e956f6f235.pdf](https://d18rn0p25nwr6d.cloudfront.net/CIK-0000225648/992dfb7f-398d-4b17-8e33-75e956f6f235.pdf)

once per year under ideal operating conditions.<sup>2</sup> A more recent study found that our failure to use continuous sampling technology is underestimating dioxin emissions by 460 to 1,290 times.<sup>3</sup> Considering that continuous sampling technology has been tested and verified by EPA since 2006<sup>4</sup> and that dioxin is the most toxic substance known to EPA – 140,000 times more toxic than mercury<sup>5</sup> – there is no excuse for not requiring continuous dioxin sampling at waste incinerators.

Similarly, the technology to continuously monitor mercury, particulate matter, hydrochloric acid, and other regulated air pollutants from trash incinerators has existed for far too long that it's time for enforcement of new EPA standards to be based on continuous monitoring to ensure that spikes in emissions, especially during startup, shutdown, and malfunction (SSM) times, are not missed for lack of looking.

While EPA's proposed new regulations for trash incinerators will be removing the loophole that exempts incinerators during startup and shutdown times, that exemption only applies to the three pollutants that are federally required to be tested on a continuous basis (CO, NOx, and SO<sub>2</sub>) and will still permit higher emissions during malfunctions to be unregulated. For all other pollutants, the higher emissions during SSM times will still go unmonitored and unregulated.

Municipal solid waste (trash) is a very variable waste stream, and incinerators burning industrial wastes, medical waste, sewage sludge, recyclables, or construction and demolition wastes have even more variability that can alter emissions.

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<sup>2</sup> De Fré R, Wevers M. "Underestimation in dioxin emission inventories," Organohalogen Compounds, 36: 17–20.  
[www.ejnet.org/toxics/cems/1998\\_DeFre\\_OrgComp98\\_Underest\\_Dioxin\\_Em\\_Inv\\_Amesa.pdf](http://www.ejnet.org/toxics/cems/1998_DeFre_OrgComp98_Underest_Dioxin_Em_Inv_Amesa.pdf)

<sup>3</sup> Arkenbout, A, Olie K, Esbensen, KH. "Emission regimes of POPs of a Dutch incinerator: regulated, measured and hidden issues."  
[docs.wixstatic.com/ugd/8b2c54\\_8842250015574805aeb13a18479226fc.pdf](http://docs.wixstatic.com/ugd/8b2c54_8842250015574805aeb13a18479226fc.pdf)

## WHERE ARE CONTINUOUS MONITORS USED AT INCINERATORS?

Hydrochloric acid: all six trash incinerators in Pennsylvania, plus Covanta's Union and Camden County incinerators in New Jersey, Covanta Onondaga in New York, and Wheelabrator's Portsmouth, VA incinerator.

Ammonia: The Union County, NJ incinerator, and Covanta's Huntington and Onondaga incinerators in New York continuously monitor for ammonia.

Dioxins/furans, PCBs, and toxic metals: Covanta Marion in Oregon, since the passage of Senate Bill 488 in 2023, will have to continuously monitor for dioxins/furans, PCBs, and nine toxic metals.

Dioxins, mercury, and particulate matter: According to [Covanta's website about their innovations](#), they claim that their Covanta Haverhill incinerator in Massachusetts, in 2010, pioneered the "installation and demonstration of a new continuous monitoring system for mercury, dioxin and particulate matter. Although the dioxin monitor still requires laboratory analysis, it allows long-term monitoring of emissions without a team of specialists."

Mercury: Covanta Bristol in Connecticut, if they get permission to start burning medical waste, says they'll continuously monitor for mercury. West Palm Beach #2 in Florida tested mercury CEMS from 2015-2018, as did Covanta's Hillsborough County, Florida incinerator (at Unit #4 from 2009-2015). Durham-York Energy Centre operated by Covanta in Ontario, Canada, and Covanta Onondaga in New York, may also have mercury CEMS.

Dioxins/furans: Durham-York Energy Centre in Ontario, Canada is another incinerator using long-term sampling for dioxins/furans.

<sup>4</sup> Environmental Protection Agency, Environmental Technology Verification Program.  
[archive.epa.gov/nrmrl/archive-etv/web/html/vt-ams.html](http://archive.epa.gov/nrmrl/archive-etv/web/html/vt-ams.html)

<sup>5</sup> Environmental Protection Agency, Risk-Screening Environmental Indicators (RSEI) Model.  
[www.epa.gov/rsei](http://www.epa.gov/rsei)

| <b>Hawai'i Department of Health Clean Air Branch (DOH-CAB)<br/>review of the bill (10/30/2023) [reprinted verbatim]</b>   | <b>Response by Energy Justice Network on behalf of<br/>Hawai'i Clean Power Task Force (1/16/2024)</b>   |             |                    |             |                 |   |          |     |              |   |          |     |              |   |          |     |              |
|---|---|-------------|--------------------|-------------|-----------------|---|----------|-----|--------------|---|----------|-----|--------------|---|----------|-----|--------------|
| <p>The Department of Health Clean Air Branch (DOH-CAB) was requested to provide feedback on a bill being considered for the forthcoming 2024 legislative session. The bill is similar to Senate Bill 488 that recently passed in Oregon to require increased continuous emissions monitoring for burning municipal solid waste (MSW) and caps the facility's medical waste incineration at 18,000 tons/year. The Oregon measure affects the Covanta Marion, Inc. MSW facility in Marion County which operates two 250 ton per day MSW combustor units. Medical waste from outside the State of Oregon is accepted at the Marion facility.</p> <p>The bill considered for Hawaii would affect the Honolulu Program of Waste Energy Recovery (HPOWER) plant on the southwest corner of Oahu owned and operated by Covanta Honolulu Resource Recovery Venture. The HPOWER plant operates one 900 ton per day mass-burn municipal waste combustor (MWC) boiler and two 854 ton per day refuse derived fuel (RDF) MWC boilers. The RDF is produced by processing MSW through shredding and size classification. Shredding and size classification for the 900 ton per day boiler is not required because the combustor is a mass-burn unit.</p> <p>The Hawaii bill will require HPOWER to develop a plan to continuously monitor or continuously sample emissions at its MSW plant from a large list of pollutants including:</p> <ul style="list-style-type: none"> <li>• criteria air pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, sulfur dioxide, and volatile organic compounds); <i>currently carbon monoxide, nitrogen dioxide, and sulfur dioxide are sampled continuously</i></li> </ul> | <p>This is accurate. You can find a copy of the Oregon bill here: <a href="#">Oregon Senate Bill 488</a></p> <p>H-POWER has three burners (units):</p> <table border="1" data-bbox="1167 574 1768 711"> <thead> <tr> <th><u>Unit</u></th> <th><u>Went Online</u></th> <th><u>Fuel</u></th> <th><u>Capacity</u></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Nov 1989</td> <td>RDF</td> <td>854 tons/day</td> </tr> <tr> <td>2</td> <td>Nov 1989</td> <td>RDF</td> <td>854 tons/day</td> </tr> <tr> <td>3</td> <td>Feb 2013</td> <td>MSW</td> <td>900 tons/day</td> </tr> </tbody> </table> <p>Refuse-derived fuel (RDF) basically just means that the trash (municipal solid waste, or "MSW") is processed to remove much of the metal and glass (which don't burn) before burning the remaining trash. The term "mass burn" is used to describe units like Unit 3 that burn trash (MSW) without removing metals or glass first.</p> <p>See the chart attached as page 20 (also in this <a href="#">factsheet</a>) for a more visual breakdown of current vs. proposed testing requirements.</p> <p>Carbon monoxide (CO), nitrogen oxides (NOx), and sulfur dioxide (SO<sub>2</sub>) are already required to be continuously monitored per federal regulation. The bill includes them just to be thorough. Note that DOH uses the term nitrogen dioxide, but should have written nitrogen oxides. Nitrogen oxides (NOx) is a collective term used to refer to nitrogen monoxide (nitric oxide or NO) and nitrogen dioxide (NO<sub>2</sub>). H-POWER is already required to monitor both. Volatile organic compounds (VOCs) are tested just once per year. Total particulate matter is tested just once per year, but the smaller (more dangerous) sizes of particulate</p> | <u>Unit</u> | <u>Went Online</u> | <u>Fuel</u> | <u>Capacity</u> | 1 | Nov 1989 | RDF | 854 tons/day | 2 | Nov 1989 | RDF | 854 tons/day | 3 | Feb 2013 | MSW | 900 tons/day |
| <u>Unit</u>   | <u>Went Online</u>  | <u>Fuel</u> | <u>Capacity</u>    |             |                 |   |          |     |              |   |          |     |              |   |          |     |              |
| 1   | Nov 1989  | RDF         | 854 tons/day       |             |                 |   |          |     |              |   |          |     |              |   |          |     |              |
| 2   | Nov 1989  | RDF         | 854 tons/day       |             |                 |   |          |     |              |   |          |     |              |   |          |     |              |
| 3   | Feb 2013  | MSW         | 900 tons/day       |             |                 |   |          |     |              |   |          |     |              |   |          |     |              |

- hazardous air pollutants (arsenic, cadmium, dioxins/furans, hexavalent chromium, hydrochloric acid - HCL, hydrofluoric acid - HF, manganese, mercury, nickel, polychlorinated biphenyls - PCB, polycyclic aromatic hydrocarbons - PAH, Per – and polyfluoroalkyl substances – PFAS, and selenium); *currently dioxin/furans, MWC acid gases, and MWC metals are sampled annually*
- carbon dioxide; *currently carbon dioxide is sampled continuously* and
- zinc.

The bill will also requires DOH-CAB to host a website to make all continuous emissions monitoring system (CEMS) data from HPOWER publicly available in real-time through an internet feed and set annual fees to cover the cost to develop and maintain the website. Requirements for the website include line chart displays of each pollutant monitored, red colored text notifications of violations, summary charts listing all violations of any applicable emissions limit, emission trend charts showing totals for all reporting facilities, and immediate alerts by email to owners, the Department, and other parties who signed up to be notified of any violations of data availability requirements or exceedances of any applicable air pollution limitations.

For implementing the continuous monitoring measures, the owner of the waste combustion facility must submit a plan 3 months after the effective date. Within 3 months of plan approval by the DOH-CAB, the owner would be required to implement the plan. The DOH-CAB would then be required to issue a determination on whether the data is reliable for enforcing permit limits within 12 months after first use of the continuous monitoring or sampling measure. Within 6 months of the determination, the DOH-CAB would then be required to issue rules for enforcement which would start no later than 12 months after its determination on whether the monitoring data is reliable. The DOH-CAB would make these determinations on an annual basis as required by the bill.

The bill requires DOH-CAB to submit the following reports to the legislature:

matter are only tested annually on Unit 3. The old Units 1 & 2 are not tested and only do engineering estimates.

Yes, dioxins/furans, acid gases (hydrochloric and hydrofluoric acids) and four metals (beryllium, cadmium, lead and mercury) are tested once per year. Arsenic, hexavalent chromium, manganese, nickel, selenium and zinc are metals that are never tested.

Yes, carbon dioxide (CO<sub>2</sub>) is already continuously monitored, as required by federal regulations. The bill includes it just to be thorough.

This is an accurate description of the bill.

- a) A report of progress made on implementing the continuous emissions monitoring requirements of the bill, no later than the regular session of 2025; and
- b) An annual report on the results of continuous monitoring or sampling that may include recommendations for legislation.

DOH-CAB supports the intent of the bill to require a higher standard of monitoring for MSW combustors and making data publicly available. However, DOH-CAB has the following concerns and comments:

Differences in Oregon’s MSW facility and Hawaii’s HPOWER facility to consider:

- Unlike the Oregon MSW facility for which SB488 placed a capped at burning 18,000 tons/year of medical waste, HPOWER typically burns significantly less medical waste, about 1,200 to 2,400 tons/year (100 to 200 tons/month). The Oregon facility accepts medical waste from outside of the state and burns untreated medical waste. HPOWER’s medical waste is treated. Hawaii Bio-Waste Systems, Inc. and Tripler Hospital have equipment to treat medical waste. After medical waste is treated, the waste is classified as MSW. Unlike the Oregon bill, the HPOWER bill would not limit or decrease emissions with such a cap as the amount of medical waste burned by HPOWER is significantly less than the Oregon facility.
- Wind patterns and location of public areas in the vicinity of the Oregon facility are different than those at the HPOWER facility (please see Figures 1 through 6). While winds transport pollutants downwind to various public areas on all sides of the Oregon facility (please see Figures 1, 2 & 3), prevailing trade winds from the northeast transport pollutants from HPOWER away from residential areas a majority of the time (please see Figures 4, 5, and 6). Generally, in order for emissions to significantly impact residential areas in the vicinity of the HPOWER facility, sustained winds with a southerly component are needed. Wind data from the Kalaeloa Airport over a five year period (January 1, 2018, to December 31, 2022) indicates that winds from this direction (135° -315°) occur 12.79% of the time. For the 87.21% of time

Note that the bill, as introduced, no longer has this requirement to provide the results to the legislature (which will be on a public website, anyway), or to provide recommendations for legislation.

We appreciate DOH-CAB’s support for the intent of the bill and have already addressed their main concerns with amendments made to the bill prior to introduction, in response to DOH-CAB’s memo.

As DOH-CAB admits here, this discussion of the medical waste provisions in Oregon’s SB 488 is irrelevant since the Incinerator Air Pollution Right-to-Know bill (Hawaii Senate Bill 2101) does not include any provisions about medical waste burning.

DOH argues that H-POWER’s emissions predominantly blow out toward the ocean, perhaps trying to imply that these emissions are not worth worrying about. However, DOH documents that 12.79% of the time, H-POWER’s emissions blow toward residential areas, which is still significant.

DOH compares to the Covanta Marion incinerator in Oregon to make its point. However, H-POWER is five times larger and actually burns about four times more waste than Covanta Marion. H-POWER also operates with fewer pollution control devices.

remaining, winds blow pollutants in a direction from HPOWER to the ocean. Please refer to Figure 6.

Even if you subtract all of H-POWER's emissions that blow toward the ocean from what they reported emitting in 2020 according to EPA's National Emissions Inventory, this is how much pollution H-POWER still released that blew toward O'ahu neighborhoods that year:

| <u>Pounds</u> | <u>Air Pollutant</u> | <u>Health impacts</u>              |
|---------------|----------------------|------------------------------------|
| 230,220       | Nitrogen oxides      | Asthma attacks                     |
| 30,031        | Particulate matter   | Heart attacks / strokes, cancer    |
| 3,274         | Hydrochloric acid    | Lung damage; eye & skin irritant   |
| 1.96          | Lead                 | Learning & behavioral disabilities |
| 1.52          | Mercury              | Neurotoxic, immune damage          |

These are amounts worthy of concern, especially considering that, except for nitrogen oxides, none of these are monitored on a continuous basis and are likely underestimated.

It's also worth noting that emissions that blow out to the ocean do not vanish, but enter the environment where people recreate, and use as a food source. Emissions like dioxins/furans, PCBs, and mercury will bioaccumulate in fish tissue and expose people at much higher doses than they would receive from breathing the air nearby.

HPOWER Controls, Source Testing, and Risk Assessment:

- The continuous emissions monitoring proposed by the bill is inconsistent with conditions specified in permits already held by HPOWER for operating its MWC boilers. The MWC boilers operate state-of-the-art air pollution control equipment for complying with emission limits including those established by federal New Source Performance Standards and best available control technology pursuant to federal Prevention Significant Deterioration regulations. The mass-burn boiler uses a spray dryer absorber with lime injection to control sulfur dioxide, MWC acid gases, sulfuric acid mist, and fluorides; a fabric filter baghouse for the control of particulate matter and MWC metals; carbon injection combined with spray dryer absorber and baghouse to control dioxin furans; good combustion practices for minimizing carbon monoxide; and Covanta Very Low NO<sub>x</sub> system combined with selective non catalytic reduction (SNCR) to reduce nitrogen dioxide emissions. The RDF boilers use a spray dryer absorber with lime injection to

It is not "inconsistent" to require better monitoring by going from testing for a chemical once per year (or never) to modern continuous monitoring or sampling technology. Several trash incinerators already do both, such as monitoring for hydrochloric acid emissions continuously *and* via annual stack tests. Find examples of some of these on page two above.

In fact, the [new regulations](#) that the U.S. Environmental Protection Agency is in the process of adopting for large trash incinerators like H-POWER explicitly provides for the use of continuous emissions monitoring (CEMS). The draft rulemaking states that the 2006 final amendments to rules for large trash incinerators allow the optional use of CEMS for particulate matter and mercury in place of annual stack testing, and allows

control sulfur dioxide, MWC acid gases, sulfuric acid mist, and fluorides; baghouse to control particulate matter and MWC metals; and good combustion practices for minimizing carbon monoxide emissions.

the optional use of CEMS for multi-metal, hydrochloric acid, and dioxins/furans in place of stack tests after performance specifications for these CEMS are promulgated.

EPA's Environmental Technology Verification Program (no longer active) tested and verified a variety of CEMS and continuous sampling technologies, including for multi-metals and dioxins/furans, around 2006. See their [Verified Technologies](#) page for details. EPA's Air Emissions Monitoring Center (EMC) also provides [Promulgated Test Methods](#) and [Performance Specifications](#) for continuous monitoring of most of the pollutants discussed here.

DOH makes a blanket statement about *monitoring* being inconsistent with H-POWER's existing permit conditions. Of course, this is true because existing permits do not require continuous monitoring for more than four pollutants. However, DOH goes on to expound about what pollution *controls* H-POWER has, which is a different issue from monitoring.

DOH's description of the controls, however, confirms that two of the three burners at H-POWER are missing two of the four common pollution control systems used at incinerators, while the new (third) burner has all four (though not as strict as modern requirements for new incinerators).

Most trash incinerators in the U.S. have four different pollution control systems – each designed for different pollutants. DOH describes them fairly well. Three of the systems spray things into the exhaust to reduce certain emissions, often moving those chemicals into the ash. The spray dryer absorber (SDA) injects lime. The carbon injection (CI) system injects activated carbon (like Brita filter material). The selective non-catalytic reduction (SNCR) system injects ammonia or urea to reduce nitrogen oxides (NOx), and the unreacted excess amount becomes ammonia air pollution. The fourth system, the fabric filter (FF) or “baghouse,” is like a large set of vacuum cleaner bags that collect particulate matter (PM) resulting from the exhaust plus the materials injected in the other control systems. This rather toxic “fly ash” is then mixed with the larger volume of

bottom ash left when trash is burned, and this combined ash is then landfilled at Waimanalo Gulch Landfill in Honokai Hale.

Pollution controls in place at H-POWER's three units (burners):

|          |           |            |                  |             |
|----------|-----------|------------|------------------|-------------|
| Control: | <u>FF</u> | <u>SDA</u> | <u>CI</u>        | <u>SNCR</u> |
| Injects: | n/a       | Lime       | Activated Carbon | Ammonia     |
| Reduces: | PM        | Acid gases | Dioxins/mercury  | NOx         |

| <u>Unit</u> | <u>Fuel</u> |   |   |      |      |
|-------------|-------------|---|---|------|------|
| 1           | RDF         | Y | Y | None | None |
| 2           | RDF         | Y | Y | None | None |
| 3           | MSW         | Y | Y | Y    | Y*   |

The fact that two of the three burners at H-POWER are missing very common pollution controls that reduce air emissions of ultra-toxic dioxins and mercury, and asthma-triggering NOx, is rather unusual and shocking. They have the fewest pollution controls of any incinerator in the U.S. Once the new federal regulations kick in by 2028-2029, these will likely be required. The City and County of Honolulu has not yet evaluated what these systems will cost, or if they are affordable to install on such an old facility. Nevertheless, the Incinerator Air Pollution Right-to-Know bill would only require installation of monitors so that we know how extensive the pollution really is, not controls to actually reduce the pollutants, which is a more expensive proposition.

\* Covanta's "Low-NOx" system (not "Very Low NOx" as DOH writes) is basically an improved way to spray ammonia at the right places and times to do a better job at reducing NOx. This technology can reduce NOx enough to meet the new federal regulations that will come into effect in 2028-2029 requiring 110 parts per million (ppm). The current federal standard is 180-205 ppm. However, the modern limit for *new* trash incinerators is 45-50 ppm, which can only be met with selective catalytic reduction (SCR), which involves the same as SNCR (spraying ammonia into the exhaust), but also uses a catalyst to reduce these emissions much further. Existing facilities like H-POWER can install this equipment, but it can be rather expensive. A study for the incinerator in Baltimore, MD found that it would

- A risk assessment, as part of the air modeling process for permitting, determined HPOWER's MWC mass-burn boiler to comply with air standards specified in Hawaii Administrative Rules (HAR) §11-60.1-179 for noncarcinogenic and carcinogenic hazardous air pollutants. The RDF boilers were grandfathered from requiring a risk assessment. However, calculations, based on impacts from the mass-burn boiler, predicted the total combined impact from HPOWER's three MWC boilers to be in compliance with HAR §11-60.1-179 for acid gases, MWC metals, and dioxin/furans.

cost \$60-90 million to install at that facility, which also has three burners. While the public health costs of asthma are also quite high (higher than the cost to install this equipment), EPA has chosen not to make the industry bear this cost to bring old incinerator up to modern standards for new facilities.

“Risk assessment data can be like the captured spy. If you torture it long enough, it will tell you anything you want to know.”  
— William Ruckelshaus, first U.S. EPA Administrator

Time for a joke: What is the difference between a mathematician, a philosopher, and an environmental consultant? Well, if you ask each one what two plus two equals, a mathematician will tell you  $2 + 2 = 4$ . The philosopher will tell you it depends on your definition of two, four, plus, and equals. The environmental consultant will take you in the back room and ask you what you want it to equal.

Sadly, this is no joke in far too many situations. Risk assessment can be more art than science, depending on many assumptions that are often off-base, such as looking at toxic exposures to incinerators by examining only air inhalation when the most toxic pollutants (dioxins/furans, PCBs, mercury...) bioaccumulate and reach people via meat and dairy products they consume, which typically fall outside of the analysis. It is highly unusual for a risk assessment to come back with anything other than “this amount of pollution is fine,” especially when conducted on behalf of a paying client that is operating a polluting facility.

That said, a risk assessment showed that H-POWER's 3<sup>rd</sup> burner is in compliance with the amount of toxic pollution they're allowed to release, but that the two older burners are grandfathered and thus exempt from the requirement to even conduct a risk assessment. DOH's statement that they *calculated* that all of H-POWER complies with the standard for allowable cancer and non-cancer toxic impacts is just that – a modeling exercise that is not based on actual emissions because none of the toxic emissions are monitored on a continuous basis, and are likely underestimated because of this

- The most recent source performance test results indicate the HPOWER facility is well within compliance with all of its air emissions limits. Please see attached source test results.

Enforcement:

- Enforcement would be an issue for many of the pollutants listed in the bill to be continually monitored since:
  - a) There are no emission limits with associated averaging times specified in federal regulations or HPOWER's permits for arsenic, hexavalent chromium, manganese, nickel, PCB, PAH, PFAS, selenium, zinc, and carbon dioxide. However, limits are specified for particulate and opacity which are surrogates for MWC metals. If the facility is complying with particulate and opacity limits, it can be assumed that limits for MWC metals are being complied with. Also, please note that zinc on the list of pollutants to be monitored continually is not listed as a hazardous air pollutant.

fact alone, not to mention issues like only examining inhalation as an exposure pathway, without considering food ingestion.

This only underscores the need to know the real emissions amounts, because these tests are based on once per year self-tests under optimal operating conditions.

It's true that the emissions limits for pollutants tested just once per year are not designed for continuous monitoring, but they can be set in a new standard that is comparable. If an annual stack test is an average of a six hour-period, for example, then a standard for continuous monitoring data could be based on rolling six-hour periods, or back-to-back six-hour periods. The point of using continuous monitoring is to catch the spikes in emissions that can occur if the facility is starting up, shutting down, experiencing malfunctions, or where waste composition or operating conditions (like temperature) changes. Allowing longer averaging times would hide those spikes and allow more air pollution to be legally released.

Particulate matter is not continuously monitored, as the statement implies. Opacity (darkness of emissions) is continuously monitored, but this is not a pollutant, per se. Monitoring darkness of emissions is not an adequate proxy for particulate matter emissions of all sizes, and is absolutely not a surrogate for toxic metals, which are released in much smaller, but significant, amounts that will not sufficiently affect visibility. Even if metals were visible enough, knowing how dark the exhaust is does not specify anything about which metals are released, and in what amounts. Different toxic metals have different emissions limits, different levels of toxicity, and different health and environmental impacts. The point of doing continuous monitoring is to stop this guesswork with surrogates and assumptions about compliance.

b) CEMS are not available for measuring: dioxin/furans, PCB, PAH, and PFAS. Also, DOH-CAB could not find information on continuous automated sampling systems for these pollutants.

While EPA's Environmental Technology Verification Program tested and verified [four dioxin/furan monitoring systems](#) in 2006, some of which are described as real-time or semi-real-time in their [factsheet](#), we are not aware of the real-time or semi-real-time kind being commercially available. This is why the Incinerator Air Pollution Right-to-Know Act provides for the use of continuing *sampling* technology where continuous emissions *monitoring* is not available, just as Oregon's law does.

While continuous monitoring can provide readings on a regular basis, such as every so many minutes, continuous sampling involves gathering a long-term sample, for up to 4-6 weeks in a cartridge, and sending that sample off to a lab for testing. Through back-to-back uses of these sampling cartridges, the full story can be gathered over time, even though real-time readings are not available with this method.

Continuous sampling systems have been in use for over 20 years. The most common is known as [Adsorption Method for Sampling of Dioxins and Furans \(AMESA\)](#). This [1998 study](#) of dioxins tested with AMESA in Belgium found that the actual emissions are 32-52 times higher than annual stack tests indicate. EPA put together a [Powerpoint presentation](#) about this method in 2002 which might be helpful for DOH to review.

Current vendors that make the technology commercially available include:

- Illinois-based Envea's [Amesa-D product](#). They claim "20 years of expertise, 40,000 dioxin analyses, and 400 AMESA® installed in waste incinerators, cement, power plants, etc."
- France-based Tecora's [Continuous Emissions Dioxin Sampler DECS](#). They have a U.S. [distributor](#) in New Hampshire. Their product can continuously sample for dioxins/furans (PCDD/Fs), polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs).

These samplers might also work on PFAS. Air sampling for PFAS is an emerging field, growing out of science showing that

- c) HPOWER's permits do not specify continuous monitoring for the aforementioned pollutants and would need to be revised.

DOH does not have the necessary resources:

- The Department does not have resources to revise the HAR to collect annual fees for developing and maintaining a real-time CEMS website, nor to develop and maintain the website.
- Should a bill be proposed, the Website should be developed, maintained, and funded by HPOWER similar to that done for developing the following real-time website for Puna Geothermal Venture (PGV): [Public Satellite View - Public - Dashboards - Grafana](#). The PGV website was developed for monitoring hydrogen sulfide, noise, wind, and rainfall.

Additional DOH staff would still be needed to review and approve the facility plan, sampling plans, and testing and test reports. Oregon estimated \$118,537 for this in the 2023 -25 biennium.

Associated Cost to consider:

- MSI – Mechanical Systems, Inc. was contacted to obtain information on the types of CEMS available for measuring pollutant emissions. According to MSI, among pollutants listed in the Hawaii bill for continuous monitoring, CEMSs are available for CO<sub>2</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, HCL, HF, and PM. There are no CEMS for measuring dioxins/furans, PCB, PAH, and PFAS. HPOWER's permits only specify the use of a CEMS for measuring CO, NO<sub>x</sub>, and SO<sub>2</sub>. HPOWER's CEMS is also set up to measure carbon dioxide. Therefore, HPOWER would need to install a CEMS to measure HCL, HF, PM, and

incineration does not destroy PFAS, but can spread it into the air. This is discussed in this [2020 presentation](#) and we can put DOH in touch with scientists working in this field.

Yes. Of course. The point of the bill is to get the permit revised to require continuous monitoring/sampling.

The Incinerator Air Pollution Right-to-Know Act ensures that DOH will have the resources it needs by assessing fees on regulated waste combustion facilities. The bill was redrafted in response to DOH's comments to clearly state that DOH may set the fees "to cover the department's cost of enforcing this section." Any amendments needed to ensure that DOH is adequately resourced for implementation are welcome.

We disagree that H-POWER should be in charge of development and maintenance of the emissions data disclosure website. Covanta (the operator of the H-POWER incinerator) and the City and County of Honolulu (the owner) have a conflict of interest and would not be invested in ensuring the most user-friendly disclosure. DOH's mandate for public health aligns better with the mission of public disclosure of data from facilities they regulate.

Mahalo to DOH staff for doing the research to locate cost estimates for this and other costs discussed below.

While it's true that "[t]here are no CEMS for measuring dioxins/furans, PCB, PAH, and PFAS," this does not negate the fact that, where these are not yet commercially available, the bill allows for continuous *sampling* of these chemicals, as Oregon's Department of Environmental Quality found as they start to implement their new law adopted through passage of SB 488 of 2023. As we document above, there are products such as Envea's [Amesa-D](#) and Tecora's [Continuous Emissions Dioxin](#)

VOCs for three MWC boilers. According to MSI, CEMS would cost over a million dollars to continually measure the additional pollutant emissions for the three MWC boilers.

- CEMS will require daily, monthly, quarterly, semi and annual maintenance along with purchase of calibration gases for which CEMS annual service contracts typically cost \$1,000-\$2,500 per month, not including travel costs.
  
- Cooper Environmental manufactures a Multi-Metal CEMS (640i Monitoring System) that provides continuous near real-time analysis for a wide range of elements including arsenic, cadmium, chromium, manganese, mercury, nickel, selenium, and zinc listed in the bill to be continuously monitored. Please see <https://sci-monitoring.com/product/xact-640-multi-metals-monitor/>.
  
- Sonoma Technology provided the following rough estimate on the cost to develop a public facing website for accessing real-time CEMS data:
  - a) Implementation of real-time, public facing website displaying CEMS data with email notifications: \$50,000 – \$100,000.
    - i. Depends on 1) data retrieval and processing; 2) website design/customization; and 3) QA/QC requirements; and
    - ii. Text messaging/pushed notifications can be included and may incur additional cost.
  
  - b) Website operations/maintenance fee after implementation: \$1,800/month, includes:
    - i. Data management system subscription;
    - ii. Website hosting fee;
    - iii. Web server operation and maintenance; and
    - iv. Monitoring of systems, routine backups, and cybersecurity.

[Sampler DECS](#) that can provide continuous sampling of these chemicals.

These and the other costs of compliance are small compared to the budget for a commercial trash incinerator like H-POWER, and are also quite small relative to the costs that will be required when compliance with new EPA regulations forces H-POWER to install the pollution control systems they've been lacking from their start.

Oregon-based Cooper Environmental (now SailBri Cooper) have long been the only company with the multi-metal CEMS capable of monitoring many metals at once.



**Figure 1** Close-up image of Covanta Marion, Inc. facility in Oregon State that is shown in the red shaded area.

Interesting, but not relevant in any way to the Incinerator Air Pollution Right-to-Know Act or H-POWER. If DOH's point is that some people live closer to Covanta Marion incinerator in Oregon than O'ahu residents do to H-POWER, it's worth pointing out that emissions travel far enough to impact residents throughout O'ahu and beyond. Dioxin travels as far as the Arctic. Mercury air emissions circumnavigate the globe. While some emissions, like PAHs are heavy and fall more locally, many will blow with kona winds toward population centers on O'ahu.

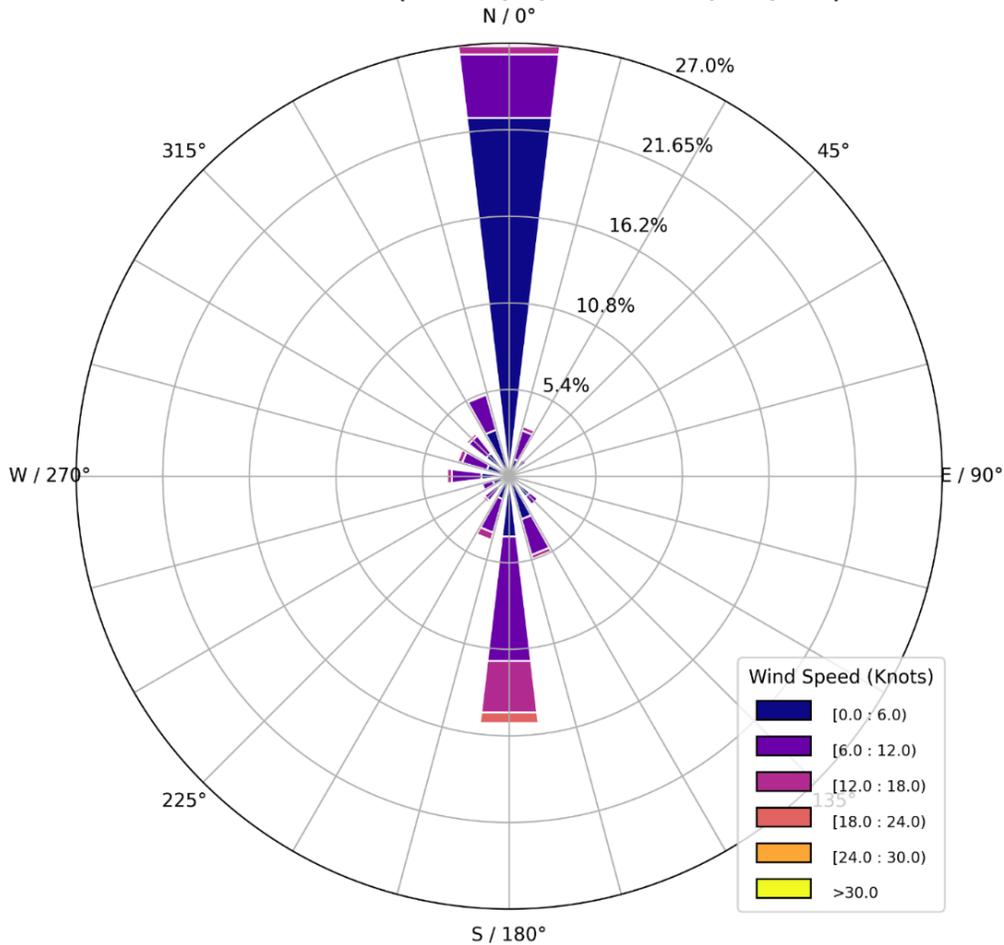


- Covanta Marion Inc Facility Area
- Commercial Area
- Residential Area
- Public Area (Museums + School)

**Figure 2** Image of residential areas (yellow), commercial areas (blue), public areas (green), and Covanta Marion, Inc. facility (red).  
 Windrose Graph with label in knots:

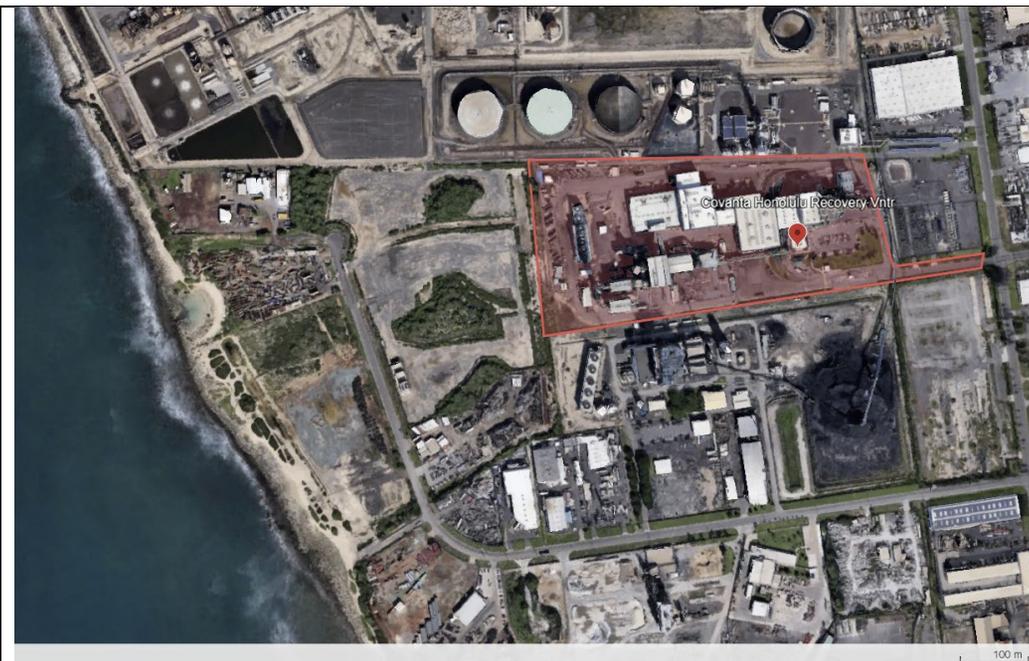
Yes, there are people in Oregon who live closer to that small trash incinerator than residents on O'ahu do to the much larger H-POWER trash incinerator.

## Salem Municipal Airport (Salem, OR) Wind Data (2018/1/1 - 2022/12/31)

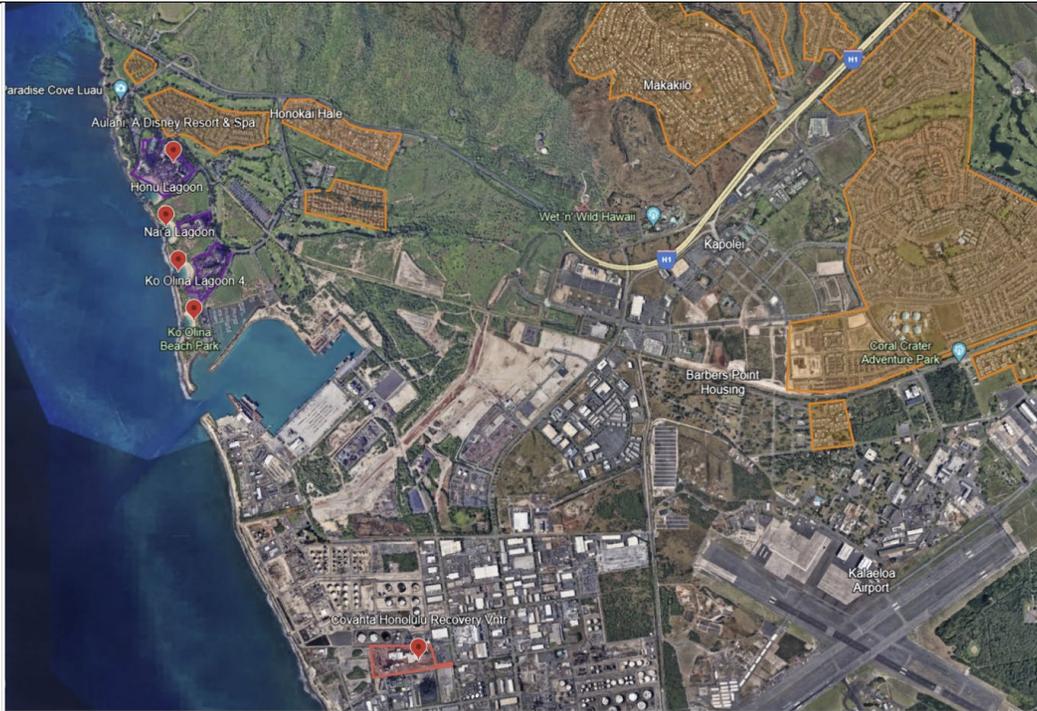


Not sure what the relevance is of pointing out Oregon's wind direction.

**Figure 3** Windrose graph from the nearest airport (Salem Municipal Airport) to Covanta Marion, Inc. facility in Oregon State. The wind rose shows the general wind direction and speed for the sampling period. Each spoke around the circle shows how often the wind blew from that direction. For example, during the sampling period from January 1, 2018, to December 31, 2022, the wind blew from the north towards the south 27% of the time. The different colors of each spoke provide details on the wind speed in knots (1 knot = 1.15 mph), of the wind from each direction.



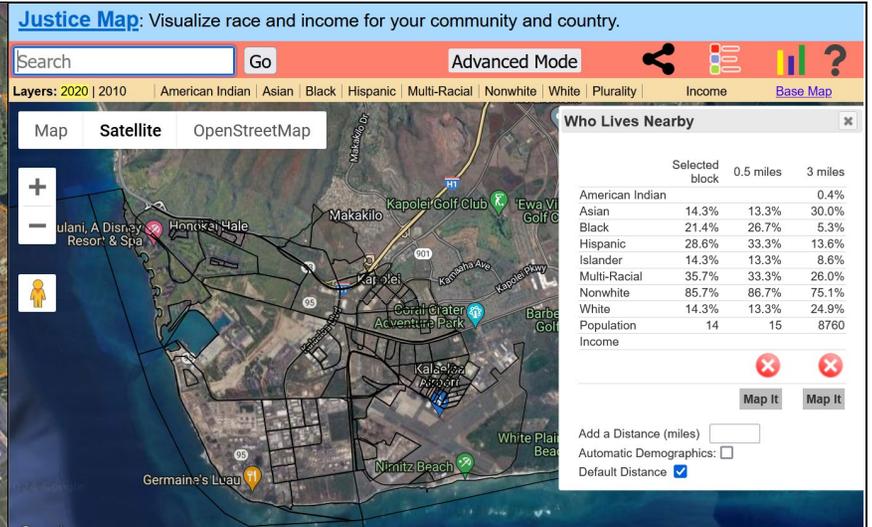
**Figure 4** Close-up image of HPOWER facility on southwest corner of Oahu that is highlighted in red.



HPower Facility Area
  Resort Area
  Residential Area

**Figure 5** Image of residential areas (yellow), resort areas (purple), and HPOWER facility (red). Kalaeloa Airport is at the at the bottom right of the image.

Windrose Graph with label in knots:



Using the JusticeMap.org site to map race and class demographics, we see that, within three miles (a standard distance for environmental justice analyses used by EPA), nearly 9,000 residents are impacted, 75% of whom identify as Black, Indigenous, or other People of Color (BIPOC) based on the 2020 Census data. This is a start environmental justice issue, especially when combined with the cumulative impacts of the many other industrial polluters concentrated in and near Campbell Industrial Park, and Kapolei, Honokai Hale more generally.



# Frequency of air emissions testing at the H-POWER trash incinerator's three burners

## Status quo vs. proposed Incinerator Air Pollution Right-to-Know Act (SB 2101)

| Chemical   | Abbreviation                                       | Testing frequency (status quo)           | Proposed bill        | Category                              |
|--|--|--|----------------------|---------------------------------------|
| Sulfur dioxide   | SO <sub>2</sub>                                    | Continuous                               | Continuous           | Criteria air pollutant                |
| Nitrogen oxides  | NO <sub>x</sub>                                    | Continuous                               | Continuous           | Criteria air pollutant                |
| Carbon monoxide  | CO   | Continuous                               | Continuous           | Criteria air pollutant                |
| Carbon dioxide   | CO <sub>2</sub>                                    | Continuous                               | Continuous           | Greenhouse gas                        |
| Ammonia  | NH <sub>4</sub>                                    | Annual                                   | Continuous           | Released via NO <sub>x</sub> controls |
| Dioxins/Furans   | 2,3,7,8-TCDD TEQs                                  | Annual                                   | Continuous **        | Highly toxic organohalogen            |
| Polychlorinated biphenyls  | PCBs   | Never                                    | Continuous **        | Highly toxic organohalogen            |
| Per- and polyfluoroalkyl substances  | PFAS   | Never                                    | Continuous **        | Highly toxic organohalogen            |
| Polycyclic aromatic hydrocarbons   | PAHs   | Never                                    | Continuous **        | Toxic hydrocarbons                    |
| Volatile organic compounds   | VOC  | Annual                                   | Continuous           | Toxic hydrocarbons                    |
| Hydrogen chloride (Hydrochloric acid)                                      | HCl  | Annual                                   | Continuous           | Acid gas                              |
| Hydrogen fluoride (Hydrofluoric acid)                                      | HF   | Annual                                   | Continuous           | Acid gas                              |
| Arsenic  | As   | Never                                    | Continuous           | Toxic metal                           |
| Beryllium  | Be   | Annual                                   | Continuous           | Toxic metal                           |
| Cadmium  | Cd   | Annual                                   | Continuous           | Toxic metal                           |
| Chromium (VI)  | Cr (VI)  | Never                                    | Continuous           | Toxic metal                           |
| Lead   | Pb   | Annual                                   | Continuous           | Toxic metal                           |
| Manganese  | Mn   | Never                                    | Continuous           | Toxic metal                           |
| Mercury  | Hg   | Annual                                   | Continuous           | Toxic metal                           |
| Nickel   | Ni   | Never                                    | Continuous           | Toxic metal                           |
| Selenium   | Se   | Never                                    | Continuous           | Toxic metal                           |
| Zinc   | Zn   | Never                                    | Continuous           | Toxic metal                           |
| Opacity (darkness of emissions; an indirect measure of particulate matter) |  | Continuous                               | (unaddressed)        | Particulate matter                    |
| Total particulate matter (filterable)                                      | PM-FIL   | Annual                                   | Continuous           | Particulate matter                    |
| Coarse particulate matter (filterable)                                     | PM <sub>10</sub> -FIL                              | None (Units 1-2); Annual (Unit 3)        | Continuous           | Particulate matter                    |
| Fine particulate matter (filterable)                                       | PM <sub>2.5</sub> -FIL                             | None (Units 1-2); Annual (Unit 3)        | Continuous           | Particulate matter                    |
| Total particulate matter (filterable and condensable)                      | PM-PRI (PM Primary)                                | None (Units 1-2); Annual (Unit 3)        | (unaddressed)        | Particulate matter                    |
| Coarse particulate matter (filterable and condensable)                     | PM <sub>10</sub> -PRI (PM <sub>10</sub> Primary)   | Estimates * (Units 1-2); Annual (Unit 3) | (unaddressed)        | Particulate matter                    |
| Fine particulate matter (filterable and condensable)                       | PM <sub>2.5</sub> -PRI (PM <sub>2.5</sub> Primary) | Estimates * (Units 1-2); Annual (Unit 3) | (unaddressed)        | Particulate matter                    |
| <b>TOTALS OF ACTUAL POLLUTANTS MEASURED</b>                                |  | <b>4 Continuous + 10 Annual ***</b>      | <b>23 Continuous</b> |                                       |

Note: those listed as "(unaddressed)" in the bill would continue to be monitored as current permits require.

\* Unit one estimates these two types of particulate matter using "Engineering judgment" and Unit two with "USEPA Speciation Profile."

\*\* Would likely need to be tested with continuous sampling. Instead of having real-time data, a long-term sampling cartridge would be switched out every 14 days to be tested at a lab.

\*\*\* Opacity is not a true measure of particulate matter and is not counted as a pollutant, itself. The different sizes (grades) of particulate matter are counted only once here.

**LATE**



# Environmental Caucus of The Democratic Party of Hawai'i

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Thursday, February 8, 2024

To: Senate Committee on Health and Human Services  
Hon. Joy A. San Buenaventura, Chair,  
Hon. Henry J.C. Aquino, Vice Chair.

Senate Committee on Agriculture and the Environment  
Hon. Mike Gabbard, Chair  
Hon. Herbert M. "Tim" Richards, III, Vice Chair

Re: SB 2101 RELATING TO HEALTH

Hearing: Friday, February 9, 2024, 1:00 p.m., Room 224 & videoconference

Position: Strong support

Aloha, Chairs San Buenaventura and Gabbard, Vice Chairs Aquino and Richards, and Members of the Committees on Health and Human Services and Agriculture and Environment:

The Environmental Caucus of the Democratic Party of Hawai'i, which has over 7,500 active members statewide, strongly supports SB 2101. SB 2101 would require waste combustion facility owners to implement continuous monitoring and sampling technologies for the purposes of collecting data regarding emissions. It establishes a publicly available website hosted by the DOH that will track, and display data collected on emissions. It requires the DOH to adjust permit limits for air contaminants based on emissions data collected and requires reports to the legislature.

Continuous monitoring of emissions from combustion waste facilities, such as the H-Power facility, is crucial for both human health and the environment.

## 1. Human Health Protection:

- a. **Air Quality Assessment:** Continuous monitoring would assess the level of air pollution caused by combustion activities. This is particularly important in industries like power generation, manufacturing, and transportation, where combustion processes are prevalent.
- b. **Timely Interventions:** By tracking emissions in real time, the combustion facility owners can take necessary measures to mitigate the effects of pollutants on human health. Early detection enables prompt action to protect nearby communities.

## 2. Environmental Impact:

- a. **Air Pollution Control:** Combustion waste facilities emit pollutants such as particulate matter, nitrogen oxides, and volatile organic compounds. Monitoring helps assess compliances with emission limits and identifies areas needing improvement.
- b. **Climate Change Considerations:** Combustion releases greenhouse gases such as carbon dioxide and methane. Monitoring tracks emissions, supports climate action, and helps to form policies to reduce greenhouse gas emission to reduce greenhouse gas emissions.
- c. **Preventing Contamination:** Monitoring prevents pollutants from contaminating groundwater, surface water, and soil ecosystems. This is especially critical in Hawai`i, where delicate ecosystems are intertwined with human activities and behavior guided by traditional, cultural, and religious beliefs.

## 3. Regulatory Compliance and Accountability:

- a. **Legal Requirements:** Many countries have regulations mandating continuous monitoring. Facilities must report emissions data to regulatory agencies. Violations can result in fines and shutdowns.
- b. **Transparency and Community Awareness. Accessible emission data empowers communities to advocate for cleaner air and demand accountability from waste facilities.**

In summary, continuous monitoring ensures timely action, protects health, and promotes environmental stewardship. It is a crucial tool in our collective efforts to create a safer, cleaner environment for our communities and the planet.

Please pass SB 2101 to require waste combustion facility owners to implement continuous monitoring and sampling technologies for the purposes of collecting data regarding emissions, track and display data collected on emissions on the DOH website and require the DOH to adjust permit limits for air contaminants based on emissions data collected.

Thank you for the opportunity to testify on this very important measure.

*Melodie Ateja* [legislativepriorities@gmail.com](mailto:legislativepriorities@gmail.com)

*Alan B. Burdick* [burdick808@gmail.com](mailto:burdick808@gmail.com)

Co-Chairs,  
Environmental Caucus of the  
Democratic Party of Hawai`i

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Russell Ruderman  
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Robert H. Pahia  
Hawaii Taro Farm  
Wailuku

Maile Meyer  
Na Mea Hawaii  
Honolulu

Tina Wildberger  
Kihei Ice  
Kihei

L. Malu Shizue Miki  
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**LATE**



Senator Mike Gabbard, Chair  
Senator Herbert M. "Tim" Richards, III, Vice Chair  
Comm. on Agriculture and Environment

Senator Joy A. San Buenaventura, Chair  
Senator Henry J.C. Aquino, Vice Chair  
Comm. on Health and Human Services

Friday, February 9, 2024  
1:00 PM, Via Videoconference

RE: **SB2101** Relating to Health, Air Quality - **Strong Support**

Dear Chairs Gabbard & San Buenaventura, Vice-Chairs Richards & Aquino  
and Members of both Committees,

The Chamber of Sustainable Commerce represents over 100 small businesses across the State of Hawaii that strive for a triple bottom line: people, planet and prosperity; we know Hawaii can strengthen its economy without hurting workers, consumers, communities or the environment. This is why we are in strong support of SB2101.

Hawaii residents living in the community near H-POWER deserve continuous monitoring of air emissions from waste incinerators; They should know exactly what they and their children are being exposed to. Currently, nine of the dangerous pollutants covered by this bill are not required to be monitored at all; another nine pollutants are tested just once a year under optimal operating conditions, underestimating the actual emissions.

Continuous monitoring will provide actual data that emissions are higher than we're led to believe. Covanta provides continuous monitoring for at least one of their other municipal clients. In Europe, continuous sampling demonstrated air emissions of the most toxic chemicals known to science - dioxins and furans - are 30 to 1,300 times higher than annual stack tests show. The people of Hawaii are equally deserving of continuous monitoring when available and continuous sampling in the alternative - either way we deserve the cleanest air quality for our keiki and kupuna, and generations to follow.

February 8, 2024

Senator Mike Gabbard  
Chair, Committee on Agriculture and Environment

Senator Joy San Buenaventura  
Chair, Committee on Health

**Re: SB 2101 Relating to Health**

Dear Chair Gabbard, Vice-Chair Richards, Chair San Buenaventura, and Vice-Chair Aquino;

Covanta respectfully submits this testimony in **opposition** to SB 2101, which would impose expansive additional emissions monitoring that is unnecessary to demonstrate the efficacy of the air pollution control and monitoring systems currently in place. Covanta is the operator of the City and County of Honolulu's H-POWER facility.

The current draft of SB2101 states that "... the purpose of this Act is to implement continuous monitoring and continuous sampling technologies that have been tested and verified by the United States Environmental Protection Agency at waste combustion facilities and to ensure that waste combustion facility owners continuously monitor, sample, and report the emissions of contaminants". However, the list of emission parameters required to be monitored includes several for which there are no USEPA approved Performance Specifications (i.e., dioxins/furans, PCBs, cadmium, lead, etc.). EPA Performance Specifications are designed to ensure that data generated by continuous emission monitoring systems is verifiable and accurate. The bill also fails to recognize or even consider the risks associated with providing inaccurate data to the public, or relevant standards established by the U.S. EPA for monitoring and measurement devices that are explicitly designed to ensure the quality and accuracy of collected data.

Air emissions from EfW facilities are heavily regulated by both the U.S. EPA and state environmental agencies. Emissions from EfW facilities are determined both through routine stack tests (performed at least once a year) and through continuous emissions monitors (CEMS). CEMS monitor flue gases continuously for carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO2), opacity, and carbon dioxide and/or oxygen. Facility operators monitor these parameters and adjust as needed to ensure proper operation and compliance. For example, monitoring CO levels continuously allows operators to respond to changes in the waste (e.g. wetter than normal waste that may have been collected during a rainstorm) to ensure complete and efficient combustion.

Other regulated pollutants are checked through a rigorous stack testing program performed by a regulator-approved third party. This testing is required by the EPA and state agency to be conducted under representative operating conditions and at >90% of



**Covanta Honolulu Resource  
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*91-174 Hanua Street  
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the unit's operating capacity. Additionally, the operating parameters under which the stack test is conducted (e.g. activated carbon addition rate, steam flow rate) set the standard for the facility's operation until the next stack test is completed. Operating the combustion process and air pollution control equipment in accordance with these standards ensures compliance throughout the year, not just during test campaigns. Furthermore, the air pollution control systems in place at HPOWER must run anytime waste is being processed. We cannot bypass or turn-off air pollution control equipment.

We respectfully request the committee defer SB2101. Thank you for the opportunity to provide our testimony.

Frazier Blaylock  
Senior Director  
Government Relations

Dear Chair Gabbard, Vice-Chair Richards, Chair San Buenaventura, and Vice-Chair Aquino;

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Other regulated pollutants are checked through a rigorous stack testing program performed by a regulator-approved third party. This testing is required by the EPA and state agency to be conducted under representative operating conditions and at >90% of the unit's operating capacity. Additionally, the operating parameters

**SB-2101**

Submitted on: 2/6/2024 6:46:16 PM

Testimony for HHS on 2/9/2024 1:00:00 PM

| <b>Submitted By</b> | <b>Organization</b> | <b>Testifier Position</b> | <b>Testify</b>            |
|---------------------|---------------------|---------------------------|---------------------------|
| B.A. McClintock     | Individual          | Support                   | Written Testimony<br>Only |

Comments:

Please support this bill. Mahalo.

**SB-2101**

Submitted on: 2/8/2024 11:28:17 AM

Testimony for HHS on 2/9/2024 1:00:00 PM

| <b>Submitted By</b> | <b>Organization</b> | <b>Testifier Position</b> | <b>Testify</b>         |
|---------------------|---------------------|---------------------------|------------------------|
| Sherry Pollack      | Individual          | Support                   | Written Testimony Only |

Comments:

I support SB2101 which would monitor toxic pollution, and as a result, protect the health and safety of our communities. According to data reported to the Dept. of Health, the H-POWER trash incinerator on Oahu is one of the largest industrial air polluters in the state. This facility generates toxic industrial air pollution that impacts public health and the climate. Only four air pollutants are typically monitored on a continuous basis, while others, if tested for at all, are tested only once per year under optimal operating conditions, and therefore, underestimates actual pollution levels.

Monitoring incinerators is critical in determining community exposure to health hazards from toxic emissions. If we are to protect the health and safety of our communities, Hawaii must implement continuous monitoring and continuous sampling technologies that have been tested and verified by the United States Environmental Protection Agency at waste combustion facilities, as in SB2101.

Mahalo for the opportunity to testify.

**LATE**

SENATE COMMITTEE ON HEALTH AND HUMAN SERVICES  
SENATE COMMITTEE ON AGRICULTURE AND ENVIRONMENT  
Hearing on February 9, 2024 at 1:00 pm

SUPPORTING SB 2101

My name is John Kawamoto, and I support SB 2101.

Waste combustion facilities typically emit tons of pollution into the air that we breathe every day that they operate. Many types of pollutants are emitted, including dioxins and furans. These two chemicals, which are similar in structure, are among the most toxic substances in the world. They can cause cancer, damage the immune system, interfere with hormonal activity, and create reproductive and developmental problems.

Dioxins are so toxic that the EPA, has set a limit that is equivalent to 30 grams of dioxin (just over one ounce of it) per trillion liters of drinking water. ([Document](#) showing that EPA has set the Maximum Contaminant Level for dioxin at 0.00003 parts per billion.)

Dioxins and furans enter the human body by breathing contaminated air, as well as by drinking contaminated water or eating contaminated food. Yet waste combustion facilities in Hawaii are tested only once a year to determine whether the emissions of dioxins and furans are at a safe level. Many other pollutants are also tested only once a year, and a number of pollutants are not tested at all. Very few pollutants are tested continuously.

Testing was once limited by the technology that was available at the time. Advances in technology have improved testing methods, making it possible to monitor numerous pollutants continuously. Those that cannot be monitored continuously can be monitored using continuous sampling methods.

Continuous testing/sampling is critical to ensure human health because the stream of municipal solid waste that is burned in combustion facilities is variable, which can alter emissions. Those facilities that burn industrial waste, medical waste, construction waste, demolition waste, or sewage sludge have even more variable emissions.

The number of pollutants that contaminate the environment is increasing, threatening the health of people and all other living things. The public must be assured that major point sources of pollution are monitored using current technology. Continuous monitoring/sampling would increase confidence in the accuracy of the results of emissions tests for pollution.

For the sake of public health, I urge the committee to pass SB 2101.