

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](#).

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 ₂	Continuous	Continuous	Criteria air pollutant
Nitrogen oxides	NO _x	Continuous	Continuous	Criteria air pollutant
Carbon monoxide	CO	Continuous	Continuous	Criteria air pollutant
Carbon dioxide	CO ₂	Continuous	Continuous	Greenhouse gas
Ammonia	NH ₄	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 ₁₀ -FIL	None (Units 1-2); Annual (Unit 3)	Continuous	Particulate matter
Fine particulate matter (filterable)	PM _{2.5} -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 ₁₀ -PRI (PM ₁₀ Primary)	Estimates * (Units 1-2); Annual (Unit 3)	(unaddressed)	Particulate matter
Fine particulate matter (filterable and condensable)	PM _{2.5} -PRI (PM _{2.5} Primary)	Estimates * (Units 1-2); Annual (Unit 3)	(unaddressed)	Particulate matter
TOTALS OF ACTUAL POLLUTANTS MEASURED		4 Continuous + 10 Annual ***	23 Continuous	

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.