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Testimony COMMENTING on SCR142 / SR134
REQUESTING THE ESTABLISHMENT OF DUST MONITORING STATIONS IN AND AROUND WAIMANALO GULCH TO PROTECT PUBLIC HEALTH AND ENVIRONMENTAL QUALITY

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, Time and Room Number: 03/30/2026, 1:04 pm, 225

Fiscal Implications: Undetermined.

Department Position: The Department of Health (Department) respectfully offers comments.

Department Testimony: The Environmental Management Division, Clean Air Branch (EMD-CAB) provides the following testimony on behalf of the Department.

The Department recognizes community interest in air quality monitoring in and around the Waimānalo Gulch Municipal Solid Waste Landfill; however, the Department offers the following comments regarding concerns with establishing particulate monitoring stations at the landfill:

- Existing regulatory and permitting frameworks already require landfill operators to control fugitive dust and prevent off-site impacts;
- Available data indicate that landfill-related dust impacts are minimal;
- Existing ambient air monitoring is designed to assess community-wide air quality rather than emissions from a specific source;

- Monitoring at or near the Waimānalo Gulch Landfill would require a source-specific approach, including new monitoring stations and supporting infrastructure with associated costs; and
- Studies conducted in Hawai‘i indicate that particulate emissions from landfill operations are below health-based standards and comparable to other monitored areas.

The Waimānalo Gulch Municipal Solid Waste Landfill is subject to Hawai‘i Administrative Rules (HAR), Section 11-60.1-33 (Fugitive Dust), which requires reasonable precautions to control fugitive dust and prohibits visible emissions from crossing the property boundary. The landfill also operates under Clean Air Branch (CAB) permit conditions that require the implementation of dust control measures, such as water application, covering of materials, and operational practices to minimize the generation of dust, as well as corrective actions if emissions exceed allowable thresholds. The landfill is also subject to Solid and Hazardous Waste Branch (SHWB) permit conditions that include dust control and operational requirements to minimize dust. Information from both CAB and SHWB indicates that landfill operations are in compliance with applicable permit conditions and dust control requirements.

Enforcement data does not indicate a demand for the proposed requirements. The Department’s records show that over the last 10 years (since January 1, 2016), the CAB received less than 0.2% of complaints associated with three (3) landfills (5 dust complaints / 2,789 total complaints = 0.179%). No dust related complaints were associated with the Waimānalo Gulch Landfill.

Existing ambient air monitoring stations, such as the Kapolei station, are designed to assess community-wide exposure and compliance with national ambient air quality standards, rather than emissions from a specific source. Monitoring in and around the Waimānalo Gulch Landfill would require expansion of the Department’s monitoring network to include at least two new monitoring stations, supporting infrastructure to conduct near-source or fenceline monitoring, and ongoing operational resources. Based on preliminary estimates, installation

costs for necessary equipment, materials, and site preparation range from $600,000 to $700,000. Depending on the monitoring scope and parameters required, recurring costs could exceed $230,000 annually for maintenance, data management, and additional specialized analysis and contractor support.

Ambient air monitoring also presents technical limitations. Measured concentrations of $PM_{2.5}$ and PM_{10} can include contributions from multiple sources, such as roadway dust, construction activity, windblown soils, and regional influences including vog. In addition, particulate concentrations can vary based on wind speed, wind direction, and other weather conditions.

Studies conducted in Hawai‘i between 2005 and 2019 involving particulate air monitoring and modeling have shown that particulate emissions associated with landfill operations were well below health-based standards and did not result in significant impacts to overall air quality. These studies also found that particulate concentrations were comparable to levels measured at other ambient monitoring locations.

Offered Amendments: None

Thank you for the opportunity to testify on this measure.

LATE

Comments before
March 30, 2026
Senate Committees on
Health & Human Services and
Agriculture and & Environment

COMMENTS ON
SCR 142 / SR 134

Relating to Landfill Dust 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, members and member groups since our support and involvement was first solicited in 2015.

Monitoring around Waimanalo Gulch Landfill is important because of the specific toxic hazards associated with H-POWER's incinerator ash, which makes up most of what is dumped in the landfill.

Particulate matter monitoring will only tell you the size of particles, however. Smaller particles are more harmful, but we're not just talking about dirt. We are talking about incinerator ash, which contains highly toxic dioxins and furans (the most toxic chemicals known to science, created in the incineration process), PFAS, and many toxic metals such as arsenic, cadmium and lead. Special testing is required to collect proper samples and identify which chemicals are involved, not just the size of the particles, as "particulate matter" or "dust" monitoring will do.

If this resolution is to be more than a feel good measure, and arises from genuine concern for public health, it must require monitoring of these specific chemicals. It should also aim to directly address the source of this dust… the H-POWER trash incinerator that creates it, and the state and county policies which allow this toxic ash to be used as alternative daily cover material – allowing ash to cover itself, as if that protects the community.

The concern over this "dust" should also translate into concern over whether it should be spread all over the island in the form of roads, where most dust will be spread everywhere that people drive. The City and County of Honolulu is actively pursuing efforts to "recycle" this toxic ash into roads, which will only make the problem worse and more widespread.

As Ernie Lau, Chief Engineer at the Honolulu Board of Water Supply, stated in the recent Water and Land Committee hearing on HB 1673, allowing H-POWER's incinerator ash to be used in roads could be "inadvertently creating a bigger problem."

In case you did not watch the 11-minute hearing in the Water and Land Committee (see video here), this is what Ernie Lau said in response to Rep. Iwamoto's questions about the ash:

Lau: I have concerns about recycling the ash. And the ash, I think, comes from incineration, the residuals left after they burn the trash. That ash can contain toxins like Mike pointed out. So, now using it, say, as a material to use in paving roads – you know that roads go all over the place, so where could it end? Could it end up in an area where, as the road starts to break down, will some of this material that's embedded in the roadway start to leach out with rainfall, and then start to seep down into the aquifer below? There's also runoff from the roads. Where will that runoff go? So, are we inadvertently creating a bigger problem for us in the future?

[Rep. Iwamoto asked if he'd support amending the bill with the language from SB 3259.]

Lau: I would say from the idea that you don't want to spread contaminants around the environment – we're already dealing with PFAS forever chemicals – I would say that that probably is a real justifiable amendment.

Last session, in a Water and Land Committee hearing on 3/20/2025, Rep. Iwamoto and Rep. Poepoe questioned the Department of Health (DOH) about the toxicity of the ash and DOH answered that they weren't convinced that it's safe. DOH said they want more data on toxic chemicals in the ash to make sure they don't exceed their environmental action levels. In the same hearing, Ernie Lau at the Bureau of Water Supply stated that Dr. Roger Brewer tested ash in the landfill for PFAS and found significant levels. See https://www.youtube.com/live/dMszfZORYgU?si=nGeym09DywaALaSz&t=7365 (2:02:45 to 2:07:11).

There are a few options for how to manage H-POWER's incinerator ash:

1) Spread it all over the island in the form of unlined roads made from incinerator ash (worst option)
2) Continue the current practice of dumping the ash in Waimanalo Gulch Landfill (or any new landfill) where it is used as cover material for itself (bad option)
3) Landfill the ash, but keep the working face of the landfill small and use tarps to cover the ash at the end of each day to minimize exposure (better)
4) End incineration and stop turning trash into toxic ash. Reduce waste through proven "Zero Waste" methods that can cut waste down through source reduction, reuse, recycling and composting, and process the residuals that remain so that landfilling the small remainder is least harmful no matter where it is placed (best)

The following is from our testimony on other landfill bills as it relates to what to do with the toxic H-POWER incinerator ash:

The county's plan to use ash to build roads all over the island is even more concerning. Doing so will turn roads into linear unlined landfills with no groundwater protection that can pollute the aquifer from many directions. It will also expose road workers, everyone who drives over the roads, and all who lives near roads where the road surface will erode over time, releasing tiny particles with toxic metals, dioxins, and other harmful chemicals.

Due to these concerns, the Democratic Party of Hawai‘i adopted resolution 2024-11 (attached) opposing the use of ash in roads unless it can be “remediated” so that toxic chemicals are removed to the point where they are not detectable. Such remediation technology does not exist, and were it possible, it would not be affordable, and is not what is being proposed by the city.

The City and County of Honolulu (“city”) is pursuing permits from the Department of Health to build a facility near the H-POWER trash incinerator in Campbell Industrial Park in Kapolei. This facility would be owned by the city and operated by Reworld (formerly Covanta) – the same owner/operator relationship that they have for the H-POWER incinerator. These proponents of ash “recycling” into roads have been spreading misinformation that needs to be corrected.

This facility would pull metals out of the incinerator’s ash for recycling, then use the remaining ash to build roads or for other construction purposes. This is unproven and unsafe, and would be a greater threat to human health, the aquifer and the environment in general than simply placing this ash in a double-lined landfill.

Department of Health would not be regulating ash reuse “case-by-case.” DOH would be permitting the ash recycling facility, enabling the county to then mix the toxic ash into asphalt at which point it is deregulated and not subject to case-by-case determinations.

Ash cannot be cleaned. There is no technology that would be applied which can remove dioxins/furans, lead, mercury, cadmium, arsenic, PFAS, and other toxic constituents out of the incinerator ash before allowing workers to handle it for roadbuilding and other construction purposes.

It is not just bottom ash. Incinerators produce fly ash (small particles caught in pollution controls… about 10% of the ash, and very toxic) and bottom ash (about 90% of the ash and less toxic, but still full of many toxic chemicals). Reworld claimed in testimony that they only handle bottom ash, but several of their own documents from their Bucks County, Pennsylvania plant (the model for the one proposed by the City and County of Honolulu) contradict their statement and show that they are taking “combined” ash, which means fly ash mixed with bottom ash.

They are not “removing aggregate” from the bottom ash. Reworld also claims that they’re removing “aggregate” from the ash as if that is separate from the ash. The City and County of Honolulu and Reworld claim that they’d be diverting 60% of the ash from the landfill. If this is the case, it is the ash itself that they want to put into roads, not just some rocks they pull out of the ash. It will be the same ash that research shows will leach arsenic and other toxic metals in real-world landfill conditions over time.

Incinerator ash is NOT “like sand.” Sand does not require tests for whether it’s hazardous waste, and disposal in lined landfills. Sand has a neutral pH while ash is far more basic, enabling toxic metals to leach out over time. Roger Babcock has been making false claims to the legislature and neighborhood boards about how it’s just like sand. This is not true.

Ash recycling into roads is failed technology. Schemes to "recycle" toxic incinerator ash into roads have failed across the country, in Tennessee, Maine, Oregon, York County, Pennsylvania – and most recently, Bucks County, Pennsylvania, which is the model that the City and County of Honolulu is holding up as the project they want to copy. That plant, owned and operated by Reworld (Covanta) removes metals from trash incinerator ash, and used to provide the remaining ash to a nearby asphalt company to use in roads. They stopped doing this in September 2022 and were going to restart in 2023, but never did. That project apparently failed, and ash is now going back to landfills, anyway.

Ash is not safe as daily landfill cover. Ash should never be used as alternative daily cover material for itself at a landfill. Daily cover is required to prevent harmful wastes from blowing into the community at night, and the idea of "alternative daily cover material" is a ploy by the landfill industry to save money by not putting soil on top of the landfill each day while making money taking waste instead. However, ash is fine material and there are examples from across the country where this has blown off of the landfill into communities. It's better to require tarps for daily cover than to allow ash to be "cover" for itself, risking exposure to wind-blown ash particles.

Reworld cannot be trusted. Reworld (formerly Covanta) – the operator of the H-POWER trash incinerator that makes this ash – was just fined $878,000 in New York for having failed to mix their fly and bottom ash properly, and having illegally dumped hazardous incinerator ash in a landfill not permitted to take hazardous waste. See: https://dec.ny.gov/news/press-releases/2025/2/dec-orders-reworld-hempstead-to-pay-878500-in-penalties-and-environmental-benefit-funds and https://law.justia.com/cases/new-york/other-courts/2024/2024-ny-slip-op-24080.html The company also has a decades-long track record of thousands of violations.

EPA's test saying ash is "non-hazardous" does not mean it's safe, non-toxic, or inert. EPA's test for whether ash is hazardous does not account for exposure to ash by inhalation, ingestion, or even by touching it, as they now admit on their website.

EPA's test only looks at what leaches out under short-term lab conditions under a certain pH, where toxic chemicals like lead and cadmium do not leach out. Scientific experts have documented that this does not represent real-life conditions and that actual leaching of toxic chemicals from incinerator ash happens in real-life, even if not in EPA's test to determine whether the ash is technically and legally "hazardous." It is clear that passing this test does NOT mean that incinerator ash is "non-toxic" or "inert." It is far from that.

In December 2024, the U.S. Environmental Protection Agency admitted on their website that incinerator ash, even if it tests legally "non-hazardous" based on tests that only look at what leaches out of ash, can still be harmful if people are exposed in other ways, including inhalation, ingestion, or touching it. Ash can blow off of trucks, blow off of the top of landfills when used as alternative daily cover at a landfill, and would be handled by road workers. Roads will also erode over time with tiny toxic particles exposing people.

EPA's statement says:

> **6. What risks are associated with management, disposal or reuse of MSW incinerator ash?**
>
> If MSW combustor ash exceeds the toxicity characteristic regulatory limit at Title 40 of the Code of Federal Regulations Section 261.24 using the Toxicity Characteristic Leaching Procedure (TCLP), it is identified as a hazardous waste due to the risks it poses to groundwater contamination under a worst-case mismanagement scenario. Non-hazardous MSW combustor ash may still present potential risks via other pathways, such as through inhalation, ingestion, or dermal (skin) contact. These risks should also be considered during transport, disposal and/or beneficial reuse of the ash as a non-hazardous secondary material.

Communities are being told that municipal solid waste incinerator ash is "non-toxic" and "inert" as a means to dismiss concerns about toxicity of ash. This is a misinterpretation of the results of the Toxicity Characteristic Leaching Procedure (TCLP) test that is used to determine whether ash is legally hazardous. EPA's statement now makes that clear. Incinerator ash was never "non-toxic" or biologically inert.

In a 2/23/2022 meeting we had with key staff at the U.S. Environmental Protection Agency's Office of Land and Emergency Management (the office that handles solid waste), EPA staff confirmed that the TCLP test is based solely on what leaches out of ash, not on exposure pathways involving inhalation or ingestion. This is a concern because there are exposure pathways not being considered. Incinerator workers are the first to be exposed. I've toured incinerators where you can write your name in the layer of ash dust that has settled and built up on the floor, yet workers are not wearing respiratory protection. There are anecdotes from communities where ash has blown off of trucks. When ash is dumped from trucks on the surface of landfills, there can be clouds of ash dust blowing away during that activity, which has been video documented by workers in one case I've seen. Incinerator ash is typically used as alternative daily cover material at landfills, which risks ash blowing into communities.[1] There are several examples of this that we're aware of. One – at the City of Baltimore's Quarantine Road Landfill – was noticed by the Maryland Department of the Environment and the city was ordered in 2010 to stop the practice since ash was blowing off-site (we believe that they have continued the practice). See the bottom of page 2 in this memo. Off-site wind-blown ash has also been documented at an ash monofill in New England. Some landfills, like Old Dominion Landfill in Monrose (Henrico County), VA, use ash to build internal roads in landfills where trucks drive over the ash and can kick it up and track it off-site. The potentials for inhalation and ingestion are significant.

Incinerator ash used to be considered to be categorically non-hazardous by EPA until a May 1994 Supreme Court decision that required that, if ash tests hazardous, it must be regulated as

[1] Historically, landfills are required to use soil as daily cover at the end of each day to prevent waste blowing into communities at night. However, the industry has learned that they can save money by not paying to fill their air space with clean soil, and *make* money taking waste in place of soil. The practice of using waste as "alternative daily cover material" (ADCM) has become commonplace, even though it can involve exposing the community to wind-blown incinerator ash or other wastes permitted to be used as ADCM. There are numerous cases of incinerator ash blowing off of landfills when ash is used as cover material for itself.

hazardous waste. Testing with the EP Tox test used to find fly ash hazardous 91% percent of the time based on lead and 97% of the time based on cadmium; bottom ash 36% of the time based on lead and 2% of the time based on cadmium; and combined ash 40% of the time based on lead and 14% of the time based on cadmium. Find more on the legal history here, as well as additional history of the Supreme Court ruling, testing changes, the above results, and how EPA's TCLP test was chemically designed to prevent a hazardous waste designation here.

In the wake of the Supreme Court ruling, EPA changed the test method to TCLP, where the testing now takes place at a higher pH where ash doesn't test hazardous. The mixing of fly and bottom ash prior to testing also enables the industry to dilute the toxicity of the fly ash while the lime in fly ash where lime scrubbers are used helps protect the bottom ash by increasing the pH. Lead and cadmium have U-shaped solubility curves where they'll leach at a high or low pH, but not in the range where the test is done. In long-term landfill conditions, changing pH can cause ash to leach lead, cadmium, arsenic, and probably other toxic chemicals. A 2004 study found that TCLP fails to simulate landfill conditions and underestimates arsenic leaching from ash, stating "[u]p to tenfold greater arsenic concentration is extracted by an actual landfill leachate than by the TCLP."

Municipal waste combustor ash passing a TCLP test does not mean that ash is non-toxic or biologically inert. The test is based solely on the content of liquids that leach out of ash at a certain pH during an 18-hour laboratory test. A TCLP determination of whether ash must be handled as hazardous waste does not account for exposures via inhalation, ingestion, or dermal (skin) contact. These exposures are possible if ash blows off of trucks during transportation, blows into the air when dumped at a landfill, blows off of the surface of a landfill (which is more possible where ash is used as daily cover material), is kicked up by trucks where ash is used to make internal roads in a landfill, or where workers handle ash to recycle it into roads or other reuse applications where it can erode or leach over time outside of a lined landfill.

Attachments

- Democratic Party of Hawai'i Resolution Adopted May 18, 2024
- Background Information in Support of House Bill 1673
- "H-POWER Pushes State to Allow Use of Ash with High Lead Content" – Environment Hawaii article

These further attachments were provided in our testimony on HB 1673 can be found here: https://www.capitol.hawaii.gov/sessions/session2026/Testimony/HB1673_HD1_TESTIMONY_EEP_02-17-26_.PDF#page=28

- HPOWER TAPS Appendix – this was obtained under a UIPA request to DOH and shows all test data to be redacted. Why is this crucial data a secret?
- A 2025 email exchange between DOH and consultants – this was also obtained under a UIPA request to DOH and shows the identity of a participant in Virginia to be redacted. Why is this person's involvement a secret?
- Zero Waste Europe, "Toxic Fallout – Waste Incinerator Bottom Ash in a Circular Economy - Research Report," Jan. 2022.

Democratic Party of Hawai‘i Resolution Adopted May 18, 2024

2024-11: Supporting Safe Management of Incinerator Ash

Whereas, Waste incineration facilities reduce every 100 tons of trash to about 30 tons of ash; and

Whereas, H-POWER—Hawai‘i’s only trash incinerator—operates in O‘ahu’s Campbell Industrial Park and burns up to 2,600 tons of waste per day, making it one of the nation’s largest waste incinerators, with its ash currently dumped in the Waimanalo Gulch Landfill in Honokai Hale; and

Whereas, While fly ash from trash incinerators is regulated as hazardous waste in several other nations, the U.S. Environmental Protection Agency (EPA) used to categorically define incinerator ash as non-hazardous, even though tests showed that fly ash qualified as hazardous over 90% of the time and even though bottom ash would test hazardous 36% of the time due to leaching of toxic lead or cadmium; and

Whereas, Since a 1994 U.S. Supreme Court ruling that incinerator ash must be handled as hazardous waste if it tests hazardous, the EPA changed the test, allowed mixing of fly and bottom ashes, and changed the test methods to enable incinerator ash to pass the test; and

Whereas, EPA staff admit that the ash testing regulations (which require testing only for what leachesout of incinerator ash at a certain pH in short-term lab tests) are based solely on whether people will be exposed by consuming water that has passed through ash and leached into groundwater and, ultimately, to drinking water supplies—and that ash testing regulations are not based on exposures from touching incinerator ash, or inhaling or ingesting ash particles; and

Whereas, Testing “non-hazardous” does not mean that ash is safe, “non-toxic” or biologically “inert”; and

Whereas, Incinerator ash is typically handled by workers with no respiratory protection, trucked to a landfill in trucks where some ash can blow or spill during transit, dumped from trucks where ash dust usually rises in a cloud that wind can carry, and is finally used as daily cover material for itself, instead of a tarp or clean soil to prevent wind from blowing ash into the community; and

Whereas, The City & County of Honolulu (the city) is currently working with Covanta to develop an ash “recycling” facility at Campbell Industrial Park, where incinerator ash would be exempted from being handled as waste, and would be used to build roads or for other purposes that can put workers, the public, and the environment in more contact with incinerator ash than would occur if it were properly contained and responsibly landfilled; and

Whereas, Roads and other construction materials do not last forever, and will erode and eventually be broken up, releasing more ash particles with no cautionary warnings about toxicity or special handling appropriate for material containing fine particles of highly toxic dioxins and furans, and toxic metals like arsenic, cadmium, chromium, lead and mercury; therefore be it

Resolved, That the Democratic Party of Hawai‘i urges the Hawai‘i State Department of Health and the city to: 1) Appropriately handle the incinerator ash (a type of “solid waste” as per HRS Section 342H-30) only through proper containment in a landfill, unless the ash is remediated to such a level that it does not pose a risk to public health and safety by first treating the ash to remove dioxins/furans, PFAS, mercury and other toxic contaminants to the point where the remaining ash has no detectable levels of the toxic chemicals, for which there is no known safe dose; 2) Ensure that trucking and landfilling uses secure tarps to preven ash from being blown by wind into the community; and 3) Cease all activities in pursuit of any effort to “recycle” or “reuse” H-POWER incinerator ash unless it is properly remediated as described above; and be it

Ordered, That copies of this resolution shall be transmitted to the offices of the Governor and Lieutenant Governor of the State of Hawai‘i, the Director of the Hawai‘i State Department of Health, all members of the Hawai‘i State Legislature and Honolulu City Council who are Democrats, the Mayor of the City & County of Honolulu, and the Director of the Honolulu Department of Environmental Services.

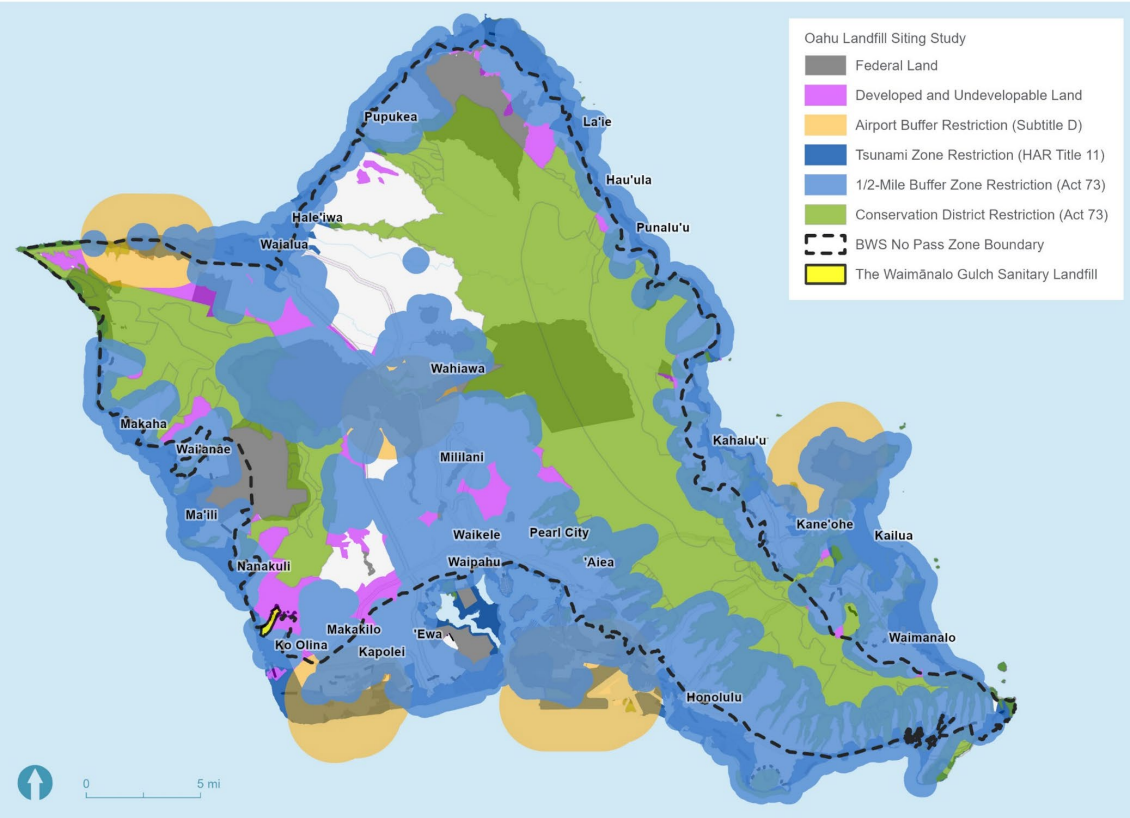
BACKGROUND INFORMATION IN SUPPORT OF HOUSE BILL 1673

This, and other bills aiming to reopen Act 73 of 2020, aim to impact the effort to site a new landfill on O'ahu. Waimanalo Gulch Landfill is supposed to close by 3/2/2028, although EPA data shows that it has many more years of capacity remaining… enough for it to last until somewhere between 2032 and 2060 depending on waste generation and composition.

The siting effort for a new landfill was supposed to be completed by the end of 2022, but was delayed for two years after not being able to find suitable land other than over the aquifer. After a failed effort to secure federal land, the City and County of Honolulu returned to one of their original proposed locations – over the aquifer – and now claims that modern double-lined landfills never leak, which is not supported by the track record of landfills across the country.

The Honolulu Board of Water Supply has testified in opposition to siting a new landfill over the aquifer out of concern for the fact that all landfills eventually leak, as has been affirmed multiple times over the years by the U.S. Environmental Protection Agency. They recommend that any new landfill be on the outside of the "no pass zone" boundary, over the caprock, which protects the aquifer from contamination.

As is evident on the map below, there is no area outside of this "no pass zone" where there is land to build a landfill because the half-mile buffer zone in Act 73 already eliminates that entire area. To enable Waimanalo Gulch Landfill to be replaced with a landfill that is not sited over the aquifer, the half-mile buffer zone would have to be reduced.



Furthermore, there are some important considerations for a landfill no matter where is it sited, in order to have the safest possible landfill:

1. **Reduce toxicity by ending incineration**

There are two things that make landfills particularly harmful: toxicity (from leachate and landfill gas releases) and climate impacts from gas generation. The toxicity is made far worse when burning waste and landfilling ash. The proposed landfill on O'ahu is primarily for the toxic ash from the H-POWER trash incinerator.[2] The landfill will be far less dangerous if trash is placed there without burning it first, which makes it more possible for toxic chemicals in waste to get out and to blow off of trucks and off of the top of the landfill (especially when ash is used as daily cover material). The City and County of Honolulu is pursuing an even more dangerous plan – to take this toxic ash and build roads with it, which would essentially be linear unlined landfills all over the island, exposing people (and the aquifer) much more than placing the ash in one place in a double-lined landfill. The H-POWER trash incinerator will not last forever, and the older two burners (that are missing two of the four air pollution control systems that most incinerators have) are now 35 years old and should be retired in the next five years. No community has chosen to bear the incredible cost of building a new incinerator in over a decade, and many communities have abandoned such pursuits after finding it politically and financially impossible. The City and County of Honolulu must plan for a future without trash incineration, and invest in Zero Waste solutions that rely on landfilling residuals in the most responsible way, which means not burning waste first.

2. **Reduce gasses, odors and leakage by source separating clean organic materials (food scraps and yard waste) to compost it and build soils**

The other main impact of landfills is from organic materials breaking down and forming leachate and landfill gas (and odors that go with it). Much of this can be avoided with a robust composting system that accepts food scraps as well as yard waste for curbside collection with economic incentives and proper education and enforcement.

3. **Stabilize the organic fraction of trash with digestion before landfilling, so you'll have a small, safer landfill**

For the dirty organic materials like sewage sludge and the organic fraction of municipal solid waste (including the food scraps that should have been source separated for composting), these materials should be digested to stabilize them before landfilling so that the methane generating

[2] As multiple life cycle assessments have demonstrated, burning trash and landfilling ash is 2-3 times more harmful than directly landfilling trash without burning first. See https://www.energyjustice.net/files/incineration/LCA.pdf for summary slides from two studies of this sort on incinerators run by the same company operating H-POWER. A study conducted for Hawai'i County in 2023 demonstrated the same when looking at the health and environmental costs of landfilling paper and plastics on Hawai'i Island vs. burning them at H-POWER on O'ahu vs. shipping them to Asia or North America for recycling. It turned out that incineration was the worst impact by far, while landfilling was less harmful, and recycling was a major benefit. See: https://drive.google.com/file/d/1tdhufZvfyXM64OnU7Z9Bdfts-_xoptaq/view

potential is removed, and the gases are produced in an enclosed system where they're easier to capture than in an open air landfill system. This is discussed in the report by EcoCycle on what to do with the "leftovers" on the path to Zero Waste: https://ecocycle.org/resources/report-zero-waste-system-leftovers/

4. **Do not use landfill gas for energy (minimize gas formation, maximize collection)**

Contrary to popular understanding, it's actually not beneficial to use landfills as energy facilities by burning captured gas for energy. This is because such projects generally involve deliberately generating more gas and manipulating the landfill in ways that are designed to increase the proportion of methane in the gas, though these manipulations tend to cause more gas to escape, which makes climate and community health impacts worse. There are strategies to best manage landfills by minimizing gas formation and maximizing collection which are discussed in the back end of the Zero Waste Hierarchy described on these pages: https://www.energyjustice.net/zerowaste/hierarchy and https://www.zwia.org/zwh.

https://environment-hawaii.org/?p=3296

Environment Hawai'i
a monthly newsletter

29 Oct 2014

H-POWER Pushes State To Allow Use Of Ash With High Lead Content

posted in: April 1999

What is H-POWER to do with its ash?

Every day that it operates, H-POWER, Honolulu's trash-to-energy plant, generates about 400 tons of ash in the process of burning about 2,000 tons of municipal solid waste. Almost all of the ash is hauled to the Waimanalo Gulch landfill, whose operator, Waste Management, Inc., is paid by the City and County of Honolulu about $16 a ton to place the ash in lined landfill cells, called monofills. That's $6,400 a day, or about $2.4 million a year.

For more than two years, H-POWER's operators have been looking for less expensive ways of dealing with the ash. In this connection, they have been pressuring officials at the state Department of Health to let them use the ash in a variety of applications: mixing it with asphalt for a paving material, making it into a construction material (something like cinder blocks), and using it as daily landfill cover (material that is spread over the refuse that arrives each day). In addition, they have asked the DOH to modify the landfill's permit to allow the mining of ash for use as a landfill cover.

So far, the Department of Health has given its approval only for the first of these uses — and even then, for a pilot project on the grounds of H-POWER's plant at Campbell Industrial Park. Nor does this use hold the promise of making great inroads into the ash supply: according to Colin Jones, H-POWER administrator for the City and County of Honolulu, the ash content in the asphalt mix is about 3 percent. "It appears that until we can develop a means of drying the ash better, this is about the best we can do," Jones wrote in a memo last October to the Department of Health's office of Solid Waste Management.

The request to use ash as landfill cover is poised to receive DOH approval — at least for a six-month or one-year demonstration project. But again, even if the DOH allows this use to continue indefinitely, that, too, would consume just a fraction of the volume H-POWER produces. The volume of daily cover that a landfill requires is typically 25 to 30 percent of the total volume of waste it takes in each day. At Waimanalo Gulch,

the daily total (excluding H-POWER ash) is 900 to 1,000 tons, which would mean at most 250 tons of the 400 tons of ash H-POWER produces each day could be used in this application.

As for use of ash in construction material, a team of researchers at the University of Hawai`i is studying the chemical and physical properties of a masonry-type product made using ash. Among other things, the researchers are studying its strength, endurance, and the degree to which heavy metals may leach from the product.

With respect to the mining of ash, the Department of Health has indicated it has no interest in allowing this. And, according to Joe Fernandez, environmental manager for Waste Management at Waimanalo Gulch, given the volume of ash produced daily by H-POWER, mining the monofills where ash has been deposited since 1990 makes no sense. "We've got more than enough [ash] coming in each day to use as cover, plus we make our own cover on site," he said, referring to Waste Management's practice of crushing rock to meet present needs for daily cover.

Ash Faulted

According to H-POWER operators, the ash is a valuable resource that is being wasted so long as it is landfilled.

DOH officials counter that even though the ash may not meet the definition of hazardous waste (indeed, as a related article in this issue explains, it cannot, since hazardous waste regulations exempt waste-to-energy plants), the ash nonetheless contains concentrations of heavy metals and other materials (including dioxins) high enough to make the uncontrolled dispersal of large quantities of it into the environment a potential public health hazard. If ash is combined with asphalt and used on roads, made into construction materials, or shaped into artifical reefs and dumped at sea (as has been done elsewhere), the result over time would be to increase the background levels of lead and other hazardous substances to which the public is exposed on a daily, routine basis, the DOH argues.

In their efforts to avoid landfilling the ash, H-POWER's contract operator, Ogden Environmental and Energy Services, prepared a risk assessment of the "beneficial use" of ash as landfill cover. The document concluded that this use would add a cancer risk of 3 in 100,000 to landfill workers and 5 in 100,000 to workers involved in ash mining — a level which the authors said compared favorably to target risk guidelines established by the Environmental Protection Agency for clean-up of Superfund sites. Superfund guidelines allow health risk levels after site clean-up to be as high as 1 in 10,000.

Leslie K.L. Au, a toxicologist with the DOH Hazard Evaluation and Emergency Response office, reviewed the risk assessment and took strong exception to the authors' use of Superfund guidelines as a standard against which to judge the health risks associated with use of ash as landfill cover. As Au writes, "We disagree with this comparison. At the landfill, we are obviously not trying to clean up a number of hazardous-waste sites which have already been unaffordably contaminated. Rather, using ash as a daily cover is the deliberate adding of hazardous contaminants to a relatively uncontaminated site which is open to the public, while trying to prevent the creation of a site which is unhealthily contaminated. Another obvious thing to say is that the easiest way to avoid creating a hazardous-waste site is not to use ash as a daily cover."

Despite his objections to the comparison, Au goes on to write, in a memo dated May 15, 1997, that, "in recognition of the conservative, health-protective overestimations of risk which the authors of this Risk Assessment used, the risk to landfill workers and visitors may be within acceptable levels."

"The exposure assessment is the key element in the Risk Assessment," Au writes. "The ash unquestionably contains substances which are hazardous to human health, so that the amount of human exposure and human intake must be tightly controlled below a certain threshold level. Failing to handle H-POWER ash at the landfill according to [the proposed method in the assessment] would increase the exposure of the workers and general public, which would then increase their added cancer risk to unacceptably high or significant levels, which would in turn reverse our verdict of 'No objection.'"

The Dutch Experience

In some countries, ash from municipal waste incinerators is permitted to be used as building material, roadbed aggregate, and fill. In nearly every case, however, the uses are restricted to bottom ash. Fly ash normally contains higher levels of lead and other materials that can pose health risks and most of the European countries that allow use of incinerator ash prohibit use of combined bottom and fly ash. (H-POWER officials want to use combined ash.)

One country with extensive experience in the use of bottom ash is the Netherlands. In the last 10 years, nearly all the bottom ash produced by municipal solid waste incinerators has been used as fill in construction projects (especially embankments, where up to 1 million tons of ash can be used in a single project) and in road work.

Dutch law requires strict regulation of the bottom ash, with limits set on the percentage of metals the ash can contain. Before any of the ash can be used, it must undergo testing and be certified. In addition, the Dutch have developed guidelines for the use of ash. Among other things, the site where the ash is proposed to be used must be at least half a meter in elevation above the average maximum groundwater level, with use banned in specially protected groundwater reserves. Also, users are required to take steps to prevent rainwater infiltrating into the ash. This can be done by applying an asphalt top and side cover to ash used in a road base or by applying an impermeable clay layer over ash used as fill.

Cutbacks in Testing

For the Dutch, rigorous testing of incinerator ash is a keystone of the reuse program. To ensure that ash meets the certification standards, both with regard to its environmental properties as well as construction specifications, samples of bottom ash are taken for every 5,000 to 10,000 tons of ash intended for use. In addition, random inspections by certifying institutes make sure that the specifications are met at all times.

Yet in Honolulu, H-POWER officials have been seeking approval from the Department of Health to reduce the frequency of ash testing required by its permit. Most recently, in a letter dated February 8, 1999, Colin Jones, the city's energy recovery administrator, asks the DOH to change the required frequency of ash testing from quarterly to annually.

Included with Jones' request are summaries of analytical reports made on combined fly and bottom ash since 1989. One data set shows the parts-per-million content of various metals, including lead, mercury, arsenic, and cadmium. The other shows the results of tests on leachate extracted from the ash using the toxicity characteristic leachate procedure test (TCLP).

"The data," Jones writes, "shows a bounded family of values which over time have trended in the downward direction for all of the metals of interest except for barium. In the case of barium, the data appears to be stabilizing toward a value of 0.8 mg/l [milligrams per liter], which is below the drinking water standard for this material."

"We believe," he continues, "this TCLP data clearly characterize the H-POWER ash as a non-hazardous material and indicate that the benign qualities of this ash are improving with time… [W]e believe this evidence should be sufficient to justify reducing the frequency of TCLP testing of our ash from quarterly to annually."

According to Gary Siu of the DOH's Office of Solid Waste Management, no decision has yet been made on Jones' request.

HAZARD.APR

State Exempts H-POWER Ash, Residue From Regulation as Hazardous Waste

Could the lead, cadmium, arsenic, and other heavy metals in H-POWER ash ever reach such high levels that the ash is regulated as hazardous waste?

Absolutely, positively not.

That's not to say the levels could not be high enough to justify concern over use of the ash in such applications as roadbeds, masonry, and landfill cover.

Nor is it to say that the metal content in the ash is always going to fall below the threshold of regulatory concern set in federal and state laws.

It is to say, however, that by definition, state regulations exempt H-POWER ash from being considered as hazardous waste, no matter how high the concentrations of such metals in either the ash itself or in the leachate produced when the ash is bathed with a mildly acidic wash, such as occurs in the standard Toxicity Characteristic Leaching Procedure (TCLP) test. (The acidity level of the TCLP wash is intended to be about the same as is found in landfills generally.)

According to Grace Simmons, head of the state Department of Health Hazardous Waste Section, the state regulations exempting H-POWER ash from consideration as hazardous waste have been in place since 1994. Simmons says the state regulations mirror federal Environmental Protection Agency language concerning ash from operations such as H-POWER, referred to in regulatory language as "resource recovery" facilities.

The EPA regulations were triggered following a U.S. Supreme Court decision in the spring of 1994. The case at issue involved ash from a Chicago trash-to-energy plant that flunked the TCLP test for lead, with one sample exceeding the EPA's recommended action level for lead in drinking water (0.015 milligrams of lead per liter of water) by 100-fold.

For non-exempt materials, if a TCLP test shows lead concentrations in the leachate of at least 5 parts per million (more than 333 times the EPA action level for drinking water), the material is to be regulated as hazardous waste.

Low Standards?

The hazardous-waste standard of 5 ppm lead in leachate, even though it does not apply to H-POWER, has itself been criticized as overly lenient to polluters. As Peter Montague writes in Rachel's Envirnment & Health Weekly of August 18, 1994, the TCLP test "does not identify the actual pollutants contained in the

ash; it only identifies those pollutants that leach out under certain specific conditions. Since, sooner or later, all of the ash will be released into the environment (even ash that is monofilled), it is the total pollutant content that will affect communities, not merely what leaches out under TCLP conditions. Therefore, the TCLP test gives a misleading estimate of the ash hazard." (Monofilling refers to the practice of placing ash in lined landfill cells intended to receive only ash. H-POWER's ash is monofilled at the Waimanalo Gulch landfill.)

H-POWER is not required to measure the total lead content in its ash as a condition of its permit to operate. However, such tests have been done, most recently in connection with the desire of the City and County of Honolulu and H-POWER's operator to see the ash re-used as landfill cover, building material, or in road construction. Under a contract issued by the federal Department of Energy's National Renewable Energy Laboratory, H-POWER ash was analyzed for a number of different elements and compounds. One sample of combined bottom ash and fly ash found lead concentrations as high as 15,809 parts per million — in other words, the ash was 1.5 percent lead. For purposes of comparison, ash samples from a sister trash-to-energy plant in Connecticut, which were used as a control in the NREL study, had on average just 37 ppm lead. (The clean-up targets for lead in soils at Superfund sites are, by contrast, 400 ppm for residential areas and 1,000 ppm for industrial or commercial areas.)

Process Residue

In addition to ash, H-POWER produces what it calls process residue. This residue consists of glass, dirt, metal pieces, and other heavy materials, saturated with solvents and other wet wastes, that fall through a 2-inch screen intended to remove non-combustible items from the waste stream. A spokeswoman for Ogden Environmental and Energy, which operates the plant, told Environment Hawai`i that typically, 12 to 13 percent of the solid waste received by H-POWER falls out as process residue. Thus, on a day when 2,000 tons of waste are delivered to H-POWER's front door, about 250 tons of process residue (in addition to 400 tons of ash) are taken out the back.

Much of this waste ends up being used to augment the daily cover at the Waimanalo Gulch landfill. Joe Hernandez, environmental manager for WMI, described how the residue is used: "Sometimes there are gaps and holes on the active face of the fill. When we have a homogeneous waste like this, it is used to fill the gaps in the daily face. Then after the face is smoothed out, we apply six inches of daily cover." (Hernandez mentioned that "auto fluff" — the cushions, upholstery, and plastics removed from cars by metal recyclers — is also sometimes used to augment the daily cover.)

Under terms of H-POWER's solid waste permit, the process residue must be tested periodically. Chemical analyses done in 1998 showed lead levels averaging 224.6 parts per million, with one sample showing concentrations as high as 650 ppm.

But once more, no matter how high the concentration of lead or other contaminant may be in process residue, it is exempted by state rules from regulation as hazardous waste.

— Patricia Tummons

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Submitted By	Organization	Testifier Position	Testify
Johnnie-Mae L. Perry	Individual	Support	Written Testimony Only

Comments:

I, Johnnie-Mae L. Perry, Strongly Support

134 SR REQUESTING THE ESTABLISHMENT OF DUST MONITORING STATIONS IN AND AROUND WAIMANALO GULCH TO PROTECT PUBLIC HEALTH AND ENVIRONMENTAL QUALITY.