# Investigative Review and Findings: Ash Management at Covanta Hempstead Resource Recovery Facility

New York State Department of Environmental Conservation

Issued: February 27, 2024

NEW YORK STATE | Department of Environmental Conservation

## I. Introduction

The New York State Department of Environmental Conservation (DEC), Division of Materials Management (DMM), has completed its review of the documents submitted by Jenner & Block LLP on December 17, 2021, and August 26, 2022, and the additional information submitted on November 3, 2023, and November 9, 2023, related to the management of ash residue at the Hempstead Resource Recovery Facility (Covanta Hempstead). Jenner & Block presented these documents on behalf of Covanta Hempstead at DEC's request. Staff from the Regional and Central Office, also referred to as 'document reviewers' in this memo, have also reviewed numerous documents transmitted to DMM for the period between 2007 – 2008, and 2011 - 2013.

The reviewed documents included Covanta Hempstead's engineering calculations, instructions to the crane operator, residue/ash truck tracking log sheets, ash management plans, ash testing results, and various e-mail correspondence provided by the Covanta Hempstead's attorney as well as DEC's historical files. The Environmental Protection Agency (EPA) Publication No. EPA530-R-95-036 on guidance for the Sampling and Analysis of Municipal Waste Combustion Ash for Toxicity Characteristics (EPA guidance document) was also consulted in reviewing Covanta Hempstead's ash management practices. This document review effort primarily focused on Covanta Hempstead's ash management practices, as well as sampling and testing of ash residues during the time periods identified above.

## II. Facility Background and Operation

Covanta Hempstead is a municipal waste combustion facility that receives approximately 2,600 tons per day of solid waste. Covanta Hempstead receives and combusts only household wastes, and non-hazardous commercial, institutional, and industrial wastes. No hazardous wastes are authorized to be accepted at this facility. The ash produced during the combustion process is between approximately 23% to 25% of the incoming waste amount by weight, or between 600 to 650 tons per day.

Ash residues are generated in the form of bottom ash and fly ash. Bottom ash is discharged into quench tanks to cool down before collection, and fly ash is collected in the baghouses. These ash streams are then separately conveyed to the ash management building via conveyor belts and stored in two different piles. Fly ash is conditioned in a pugmill to add moisture before discharging into the ash pit. Both ash streams, therefore, possess adequate moisture content to ensure that they do not become airborne.

## III. General Observations on Ash Handling and Sampling

Covanta Hempstead's Part 360 solid waste permit requires the facility to meet the requirements in the Part 360 regulations and follow the procedures and techniques in the approved Ash Residue Management Plan ("ARMP") for sampling and analysis of the ash residue on a semi-annual basis. The procedures and techniques in the ARMP are based on the requirements of the Part 360 regulations and on EPA guidance for the sampling and analysis of municipal waste combustion ash. It involves collection of

multiple composite samples of ash over multiple days of facility operation. The analysis of the ash must be performed by a third-party laboratory certified by New York State Department of Health's Environmental Laboratory Approval Program. The results of the analysis are used in making a hazardous waste determination on the ash prior to disposal.

Once approved by DEC, the ARMP becomes a part of the facility's operating permit. Any changes or modifications made to the DEC-approved ARMP requires prior DEC approval.

Between June 2006 and October 2011, the ARMP was revised five times. The ARMP was revised again in December 2014, and has remained the same since then. The changes to the desired ratio of bottom ash to fly ash for transportation and disposal are summarized in Table 1 below.

As part of the documents provided to DEC for this review that were not previously available to DEC were internal Covanta Hempstead facility engineer instructions to the crane operators regarding the number of buckets for each ash stream to be used in placing the ash onto the truck beds. These instructions were identified as being based on engineering calculations performed by Covanta Hempstead's facility engineer. Staff were also provided with general weights for bottom ash and fly ash, that was then applied for determining compliance with the ratio when reviewing the number of buckets used for loading a truck.

Document reviewers found that, from April 2006 until September 2014, the two ash streams were loaded into the outbound trucks in layers using a certain number of bucket counts as prescribed by Covanta Hempstead's facility engineer's instruction to the crane operators. Document reviewers found further that that the loading instructions were not always in line with the desired ratio as described in the then approved ARMP. While Covanta has subsequently indicated that the weight of fly ash and bottom ash could deviate from the standard weight provided, there are no records that that this deviation was the cause of changing the number of bucket loads. Covanta Hempstead changed this method of truck loading starting in September 2014. Since that time, the bottom ash and fly ash are mixed at the bunker at the generation ratio and placed into a third pile as combined ash. The combined ash is then transferred to the outbound trucks for disposal.

## IV. Sampling and Testing of Ash Residue

The approved sampling and testing protocol established in the ARMP is based on EPA guidance for the sampling and analysis of municipal waste combustion ash and the Part 360 regulations and involves the collection of multiple composite samples of ash over multiple days of facility operation. The sampling period goal is to collect samples representative of what EPA refers to in its guidance as the "temporal variability of the ash." The approved sampling and testing protocol included in the ARMP is the approved

procedure to sample and analyze the ash. The results of following the protocol are used in making a hazardous waste determination.

No additional sampling or testing of the ash is required after it leaves the generating facility.

## V. Summary of Document Review

Covanta Hempstead revised and submitted its ARMP to DEC five times during the periods between 2006 - 2014.

Following are the highlights of the document review:

- Covanta Hempstead would sample and test the ash residue as per the ratio indicated in the ARMP identified in Table 1 below.

Table 1 – Predicted Ash Generation Rate and Truck Loading Ratio

| Year of ARMP | Predicted Ash Generation (%BA / %FA, by weight) | Desired Ratio of Truck Loading (%BA/%FA, by weight) and ash sampling |
|---|---|---|
| June 2006 | 85/15 | 70/30 |
| December 2006 | 85/15 | Unspecified |
| February 2008 | 85/15 | 62/38 |
| October 2009 | 85/15 | 62/38 |
| October 2011 | 70/30 | 70/30* |
| December 2014 | 70/30 | 70/30* |

* Indicates the ratio of representative samples for ash testing. The actual ratio for truck loading was not mentioned.

- Covanta Hempstead's facility engineer revised truck loading instructions for the crane operator multiple times, particularly on the number of buckets required for bottom ash and fly ash into outbound trucks to achieve the desired loading ratio. The internal facility instructions to crane operators regarding truck loading ratio using a certain number of bucket counts, were identified during this document review. DEC staff were not provided or aware of these internal Covanta Hempstead instructions before this review effort. It was also identified through this document review that at times instructions were given to crane operators to load trucks with a higher percentage of fly ash, which was in contradiction with the loading ratio described in the DEC-approved ARMP. Document review also identified that between 2007 and 2013, these crane operator instructions were not strictly followed. This deviation from the DEC-approved ARMP is a violation of Covanta Hempstead's Part 360 permit and is discussed in more detail below.

- In August 2007, Covanta Hempstead changed the ratio for truck loading from 70% BA and 30% FA to 62% BA and 38% FA by weight. DEC was not notified of

this change until six months later in February 2008. Therefore, this change of mixing ratio without DEC authorization was a violation of the DEC-approved ARMP as well as Covanta Hempstead's Part 360 operating permit.

- Based on Covanta Hempstead records, the crane operators' loading of the trucks resulted in instances of a deviation from the approved ratio as indicated in the operable ARMP.[1] For this document review, DEC was provided with loading information for 11,322 trucks for the periods 2007-2008 and 2011 -2013. Document reviewers found the following:[2]

- **10,739** truckloads, or **95%,** showed no substantial deviation (< 5%) from the ash ratios contained in the operable ARMP.

- **583** truckloads, or **5%,** showed a deviation of +5% more fly ash than approved in the operable ARMP.

- **342** truckloads, or **3%,** showed a deviation between 5% and 10%, more specifically by little over 7%.

- **241** truckloads, or **2%,** showed a deviation of greater than 10% more fly ash than approved in the operable ARMP.

## VI. Conclusion and Summary of Findings

- Covanta Hempstead revised its ARMP five times between 2006 and 2014.

- In August 2007, Covanta Hempstead changed the targeted ratio for truck loading from 70% BA and 30% FA to 62% BA and 38% FA by weight. Covanta Hempstead notified DEC of this change six months later, in February 2008. **Therefore, this change of mixing ratio without authorization was a violation of the approved ARMP as well as Covanta Hempstead's Part 360 operating permit.**

- Covanta Hempstead changed its ash loading instructions to crane operators at least nine times between 2006 and 2014. Based on Covanta Hempstead records, the crane operators' loading of the trucks resulted in

[1] Deviations from the ARMP for percentages of loading of combined ash are not predictive of whether hazardous ash was transported for disposal.

[2] A threshold of 5% is used in order to account for deviations that are reasonably expected as part of the prior ash loading process. A truck holds approximately 80,000 lbs. of combined ash. 5% represents 4,000lbs. Buckets of BA and FA were found to reflect some level of deviation based upon variations in density due in part to feedstock and loading procedure, including the fullness of each bucket based upon the crane operator. Buckets of BA ranged in weight from 9,274 lbs. — 9,540 lbs., and buckets of FA with metals removed ranged in weight between 3,354 lbs.— 4,976 lbs. Minor discrepancies in each bucket load could reasonably be expected to deviate by 4,000lbs, or 5%, in a full truck load.

some truck loads containing more fly ash than approved in the ARMPs. This was not consistent with the ARMPs and the DEC-approved loading ratio for ash. As a result, the ash as sampled and tested was not representative of all ash sent out for disposal. **Each incident of delivering combined ash that was fly ash heavy beyond the expected and not following the authorized loading ratio was a violation of the ARMP and Covanta Hempstead's operating permit.**