



Biosolids EMS Internal Audit Report

Camden County Municipal Utilities Authority
Camden, New Jersey

Audit Report Date: September 5, 2012

Audit Conducted by:

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Audit Dates: August 21 and 22, 2012

Audit Report Prepared by: Janet Miles, Doug Burns and Chris Waldron

1. SUMMARY

An Environmental Management System Internal Audit was conducted at the Camden County Municipal Utilities Authority as required by National Biosolids Partnership EMS Element #16. The general purpose of the audit was to determine if CCMUA is complying with its Environmental Management System and the National Code of Good Practice specifically regarding its newly completed Sludge Drying Facility and odor minimization.

One of CCMUA's primary goals is its commitment to optimizing air quality and odor control performance by installing a Sludge Drying Facility to process 100% of the sludge produced at CCMUA. Currently CCMUA does not operate the Sludge Dryers. Komline Sanderson has a contract with Synagro to operate the Sludge Drying Facility during the commissioning period and performance test. Once the dryers pass the performance test CCMUA will have a 10 year contract with Synagro to operate the dryers.

In response to a recent odor complaint, the team reviewed CCMUA's procedures for responding to odor complaints including addressing the problem, identifying the cause and taking corrective actions.

The Auditors also followed up on corrective actions taken on nonconformances and opportunities for improvement from the November 2011 Internal Audit and 2011 Interim Audit.

A. Audit Scope and Methodology

The EMS Coordinator, Andrew Kricun, selected 3 individuals as Internal Auditors that are not directly involved in the day-to-day operation of the plant - two CCMUA staff members and a consulting engineer, DB/Guarino Engineers.

The internal audit consisted of interviews with CCMUA staff and a representative of Synagro, the contract operator for the Sludge Dryers. The following is a list of the individuals interviewed:

Andrew Kricun, Executive Director/Chief Engineer,
Robert Cornforth, Director of Operations and Maintenance
Jack Connolly, Assistant Director of Operations and Maintenance
Gayle Pagano, Regulatory Compliance Officer
Steve Lee, Chief Operator
Alan Parry, Synagro

Following the interview with Alan Parry, the Auditors were provided a plant tour of the Sludge Drying Facility beginning at the point where the dewatered sludge cake leaves the CCMUA facility by conveyor belt and is delivered to the Sludge Drying Facility's conveyors.

Following the tour of the Sludge Drying Facility, the Auditors also toured the areas in the plant where there were previous non conformances: the Dewatering Facility's electrical room and the GBT area.

1. SUMMARY OF AUDIT FINDINGS

The internal audit identified a number of strengths in CCMUA's program, findings needing correction and opportunities for improvement which are summarized in detail below.

A. EMS Strengths

1. CCMUA has significantly reduced the volume of biosolids generated by 75% from 160 tons per day to 40 tons per day thereby reducing disposal costs.
2. Odors have been significantly reduced since the operation of the Sludge Drying Facility due to the decrease in the quantity of trucks hauling biosolids within and from the CCMUA plant (from 7 trucks per day to 1-2 trucks per day). In addition, the dried biosolids have significantly less odor potential than untreated dewatered biosolids.
3. Biosolids produced are Class A and disposed of for beneficial reuse to Lehigh Cement in Maryland as a fuel for their cement kilns.
4. CCMUA is exploring an option to sell the dried product to COGEN, as fuel in attempt to reduce the disposal cost even further.

B. Findings Needing Correction

1. Biosolids Hauling Manifests from Synagro should contain the final destination.
2. Reduce the number of totes filled with nuggets in the basement of the Sludge Drying Facility to eliminate a potential odor source.
3. Review with Staff procedures and responsibilities for handling odor complaints and documentation requirements. (Follow "Plan, Do, Check"). Identify the final filing location of the investigation report and documents.
4. Follow good housekeeping procedures and keep hoses rolled up when not in use (use hose rack) in GBT area.
5. Prioritize the repair of the ventilation fan in the Dewatering Building due to the fact that this building has the highest odor potential.
6. Install proper lockout device on electrical equipment in accordance with OSHA standard. (Replace plastic tie with a locking device).
7. Complete Sludge Drying Facility design to eliminate unnecessary storage of solid material to reduce odor potential.

C. Opportunities for Improvement

1. Develop an Inspection Form for the required annual inspection of the biosolids disposal site and an SOP for Inspection of Biosolids Disposal Site.
2. Improve communication between Synagro and CCMUA O&M staff.
3. Although responsibilities are clearly defined in Synagro's contract with CCMUA, we should improve communication among all CCMUA staff regarding the breakdown in responsibilities for the Sludge Drying Facility (HVAC, utilities – electrical and plumbing, carpentry, doors/windows, etc).

2. AUDIT DETAILS

A. Sludge Drying Facility

On August 21 and 22, 2012, interviews were conducted by Doug Burns, Chris Waldron and Janet Miles. The CCMUA staff members interviewed were: Andrew Kricun, Executive Director/Chief Engineer, Robert Cornforth, Director of Operations and Maintenance, Jack Connolly, Assistant Director of Operations and Maintenance, Gayle Pagano, Regulatory Compliance Officer, and Steve Lee, Chief Operator. Synagro staff member interviewed was Alan Parry.

Records reviewed included:

- Synagro's manifest for hauling and disposal of heat dried product
- CCMUA's daily spreadsheet containing process control data from the lab and shared with the operations department.
- NJDEP Residuals DMR
- NJDEP Residuals Transfer Reports
- Synagro's SOP for operating the Sludge Drying Facility
- Synagro's daily shift log containing operational data, start and stop time; hourly dryer temperature log; scale readings every hour.

The following operational controls were verified during the audit:

- Every shift a CCMUA operator contacts Synagro to provide daily operational data needed for the sludge dryer operation.
- Synagro has access to CCMUA's SCADA system called "Open Enterprise" and its Scratch Pad log which contains data needed for process control.
- It is understood that both CCMUA and Synagro will notify each other immediately if there is a problem or emergency. Currently there is no SOP for communication procedures for an emergency situation.
- Alan Parry or a designated operator from Synagro attends CCMUA's "Morning Meetings" as another method to communicate information. It was noted by some CCMUA staff that Synagro is not consistently present

at every Morning Meeting and it is believed the reason is because the official agreement (or transfer) is not in place.

- The draft SOP entitled “Coordination with Synagro” was reviewed and comments were provided. The SOP now reflects CCMUA’s procedure for providing daily information and coordination with Synagro and procedures for the transfer of dewatered sludge cake to the Sludge Drying Facility.
- At the time of the audit, Synagro was processing 100% of CCMUA’s dewatered cake. However, it was noted in the manifests that when the dryers were down, CCMUA trucks hauled dewater sludge to Atlantic Waste Disposal in Virginia (mix it with lime for Class A) and to ACUA for disposal in the incinerator. When CCMUA’s contract with Synagro becomes effective, Synagro will be responsible for disposal of the dewatered sludge cake.
- Sampling and analysis of dried product is conducted to demonstrate compliance with applicable standards. CCMUA supplies sample collection bags and instructions with collection dates to Synagro at the beginning of every month. Synagro delivers the samples to CCMUA laboratory when completed.
- Trucking manifests for the dried product are supplied to CCMUA so they can be entered into their computer system for regulatory reporting. The dried product is either delivered to Lehigh Cement for beneficial reuse (fuel for kiln) or to Waste Management’s Landfills, Grows or Tulleytown. The July/August file contained Waste Management manifests for dried product hauled by Down 2 Earth and did not have the final destination designated. Both CCMUA and Synagro noted that the truck driver cannot designate a final destination on the Waste Management manifests until the driver arrives at the landfill site. At that point, the driver is told where to deliver the product – either to Grows Landfill or Tulleytown landfill and each have a different address and license number. Discussions continue between CCMUA and Synagro and the trucking firm to resolve this issue as CCMUA is required to document the final destination of the dried product. Alan Parry stated that he visited the Lehigh Cement facility in the past.
- Observed approximately 100 totes containing odorous “nuggets” in the basement of the Sludge Drying Facility due to a piece of equipment being down, the delumper. The totes are transferred to the CCMUA Sludge Storage Building by forklift for disposal with CCMUA grit and screenings. Totes are a noted source of odor in the building. The delumper is off line due to concern of it being an explosion potential after a flare was discovered in July. Komline Sanderson and Synagro are working together to resolve this situation.
- CCMUA has reduced the number of trucks leaving the facility from 7 trucks/day to 1-2 trucks/day thereby reducing potential odors from trucks through the neighborhood. Synagro instructed their haulers exit the CCMUA plant via the back gate due to the fact that the trucks cannot clear

the rail bridge at the front entrance. The trucks should follow the trucking route south to Morgan Blvd.

- Synagro provides CCMUA with weight of dewatered sludge from scales at the conveyor belts located at the point where the sludge is moved from CCMUA to Synagro. (Auditors did not review log with reported scale weight that are read every hour). The scale weights are converted to tons and provided to CCMUA. It was stated that the Synagro and CCMUA data had a 36 ton error due to Synagro's scale. Synagro is working with the vendor to calibrate the scales. CCMUA has ordered scales to be installed before the dewatered sludge cake is transferred to Synagro.
- CCMUA conducts annual inspections of its biosolids contractors to verify compliance with the EMS and their contract with CCMUA. Andy Kricun stated that he visited ACUA on July 19 and 20, 2012. ACUA burns the dewatered sludge cake in its incinerator.

B. Odor Complaints

On August 21 and 22, 2012, interviews were conducted by Doug Burns, Chris Waldron and Janet Miles. The Auditors interviewed CCMUA staff members regarding the CCMUA's SOP entitled "Handling Odor Complaints", CCMUA's odor patrol checklist for the plant and odor complaint investigation form. The CCMUA staff members interviewed were: Andrew Kricun, Executive Director/Chief Engineer, Robert Cornforth, Director of Operations and Maintenance, Jack Connolly, Assistant Director of Operations and Maintenance, Gayle Pagano, Regulatory Compliance Officer, and Steve Lee, Chief Operator.

Records reviewed include:

- SOP entitled "Handling Odor Complaints"
- Odor Patrol form
- Weekly Staff Meeting Minutes
- CCMUA Board of Commissioners Regular Meetings

The following operational controls were verified during the audit:

- Reviewed response to a recent odor complaint on Saturday, June 8, 2012. The odor complaint was followed up by Andy Kricun, Executive Director. He contacted the person making the complaint and followed up with O&M staff. Documentation of the incident is contained in the June 15, 2012 Weekly Staff Meeting minutes (EMS section) as well as the June 18, 2012 CCMUA Board of Commissioners Regular Meeting. It was noted that the supervisor conducting the odor patrol did not notice the door open to the building that houses the strain press, which is noted as not being under negative pressure. The contract operator, Komline Sanderson was responsible for keeping the door closed. The June 15th meeting minutes state that corrective actions are being taken to have the room under

negative pressure. The Auditors questioned if the SOP on Handling Odor Complaints was followed. The general response was that Andy Kricun follows up with public odor complaints, but as far as completing the "Odor Investigation Form" and an aerial map with the complaint location and wind direction noted, and print- out from the Authority weather station, it was not completed for the June 8, 2012 odor complaint. There were 2 odor complaints noted in May 2011 where follow up was conducted but documentation was not in accordance with SOP.

C. Reviewed Corrective Actions Taken on Previous Nonconformances

The Auditors conducted a tour of the areas of the Dewatering Building and Gravity Belt Thickener Room where previous nonconformances were noted. The tour was led by the CCMUA Electrician, Eliezer Reyes.

The following was verified during the audit:

- The Auditors visited the GBT area and noted that the GBT doors were closed on all 3 GBTs (#2 was operating). A hose was lying on the floor and extended approximately 20 feet (see attached photo). The hose creates a safety hazard (tripping hazard) for anyone walking in the area. Recommend winding the hose around the metal hose rack when not in use.
- The Auditors visited the Dewatering Building's Electrical Room and observed that the lockout/tag out procedures for the circuit breakers. It was noted that plastic ties were used for the lockout procedure and are not in accordance with OSHA standards. (See attached photo).