

RCRA Inspection Report

1) Inspector and Author of Report

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U.S. Environmental Protection Agency, Region 4
Enforcement and Compliance Assurance Division
Chemical Safety and Land Enforcement Branch
RCRA Enforcement Section
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2) Facility Information

University of Kentucky (UK)
355 Cooper Drive
Lexington, KY40506-0314

EPA ID#: KYD000830851

3) Responsible Officials

David W. Hibbard, Executive Director –
Environmental Health and Safety

4) Inspection Participants

Brian Butler, UK
Lee Faulkner, UK

Amy McCracken, KDEP
Raj Aiyar, USEPA

5) Date of Inspection

July 31, 2024, at 9:00 a.m.

6) Applicable Regulations¹

Resource Conservation and Recovery Act (RCRA) Sections 3002 (42 U.S. Code – Annotated U.S.C.A. 6925 and 6927), and 40 Code of Federal Regulation (C.F.R.) Parts 260 - 270, 273, 278, & 279; Kentucky Revised Statutes Title XVIII, Chapter 224, Subchapter 46-Hazardous Waste *et seq.* (2006), and Title 401 of the Kentucky Administrative Regulations (K.A.R.) Chapters 30, 39 and 40.

Pursuant to 401 KAR 39:005, Section 1 [40 C.F.R. § 260.10], a large quantity generator (LQG) of hazardous waste is a generator who generates greater than or equal to 1,000 kilograms (2,200 pounds) of non-acute hazardous waste in a calendar month.

Pursuant to 401 K.A.R. 32:080 Section 1(1) [40 C.F.R. § 262.15(a)], a generator may accumulate as much as 55 gallons of non-acute hazardous waste in containers at or near the point of generation where wastes initially accumulate, which is under the control of the operator of the process generating the waste, without a permit or without having interim status, as required by KRS § 224.46-520 [Section 3005 of RCRA, 42 U.S.C. § 6925], and without complying with 401

¹ As the State's authorized hazardous waste program operates in lieu of the federal RCRA program, the citations of those authorized provisions will be to the authorized State program. However, for ease of reference, the federal citations will follow in brackets.

KAR 39:080, [40 C.F.R. § 262.16(b)], except as required in 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)(7) and (8)], provided that the generator complies with the satellite accumulation area conditions listed in 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)] (hereinafter referred to as the “SAA Permit Exemption”).

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.17], an LQG may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status, as required by KRS § 224.46-520 [Section 3005 of RCRA, 42 U.S.C. § 6925], provided that the generator complies with the conditions listed in 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.17] (hereinafter referred to as the “LQG Permit Exemption”).

Pursuant to 401 KAR 39:080, Section 3(1) [40 C.F.R. § 273.9], a small quantity handler of universal waste (SQHUW) is a universal waste handler who does not accumulate 5,000 kilograms or more of universal waste (batteries, pesticides, mercury-containing equipment, lamps, or aerosol cans, calculated collectively) at any time.

7) Purpose of Inspection

The purpose of this inspection was to conduct an unannounced compliance evaluation inspection to determine University of Kentucky (known hereinafter as “UK”, “university or “the facility”) compliance with the applicable requirements of RCRA and the corresponding Kentucky regulations. This was an EPA lead inspection.

8) Facility Description

The University of Kentucky is a land grant state university. The university was founded in 1865 and is located on approximately 800 acres of property. There are approximately 180 academic and educational buildings on campus. The university consists of sixteen colleges and professional schools, which offer over 200 academic programs. The university has approximately 31,000 students, 2600 faculty, and 13,000 staff. University has approximately 2700+ laboratory spaces corresponding to 850+ research groups. According to Brian Butler, the waste generation has increased after the covid pandemic due to significant increase in research activities across the campus. The City of Lexington provides the facility with potable water and domestic sewer services. The primary NAICS code for the facility is 611310 (Colleges, Universities, and Professional Schools).

The KDEP issued a Part B hazardous waste operating permit to UK on December 31, 2017 (Permit Number KYD-000-830-851) for the storage and limited onsite treatment of hazardous waste in containers at the Environmental Quality Management Center (EQMC). The permit expires on December 31, 2027, unless revoked and reissued, or terminated. On August 2, 2024, University submitted a notification of a Class 1 Modification to their hazardous waste operating permit. The submittal contained modification to the EQMC’s contingency plan that included updating a contact name and phone number of an emergency coordinator. In addition to the hazardous waste management activities in the EQMC permitted hazardous waste area, UK is also registered as a Large Quantity Generator (LQG) and a transporter of hazardous waste. UK

also manages their universal waste including waste pesticides, spent aerosol cans and mercury devices at the EQMC. The universal waste lamps are managed by the UK's Recycling center.

The EQMC is located at 355 Cooper Drive, Lexington, in Fayette County, Kentucky. The EQMC has been in operation since 1998. Hazardous waste is received from the main campus's research laboratories, chemistry teaching laboratories, medical and pharmacy schools, hospital operations, and maintenance operations. Hazardous waste is also received from UK farms, animal disease and diagnostic laboratory, community colleges and other offsite related UK facilities. According to Brian Butler, the EQMC building is likely to be moved to a different location towards the end of 2026 due to a major construction project near their facility involving a 550,000 square-foot cancer and advanced ambulatory facility.

The facility consists of a single-story structure on the university campus which houses twelve (12) container storage areas for various types of waste. The activities at the EQMC comprises of bulking waste while retaining all associated waste codes without any exceptions and conducting elementary neutralization to make waste safer to handle and transport. There is currently no oxidation/reduction of hazardous waste, blending of hazardous waste or crushing operation of any type conducted at the EQMS facility.

EQMC's RCRA hazardous wastes may include all characteristic waste; F002, F003, F004, F005, and F027 listed hazardous waste; P001-P205 acute hazardous waste; and U001-U401 non-acute hazardous waste. EQMC's non-RCRA regulated wastes include pesticides, asbestos containing materials, non-RCRA pharmaceuticals and used oils. All wastes, both hazardous and non-hazardous, are eventually sent off for final treatment and/or disposal.

The EQMC building is 11,000 square feet. The building is equipped with security doors and an alarm system that includes door alarms, fire alarms, five Lower Explosive Limit (LEL) fixed combustion gas sensors, two carbon dioxide (CO₂) sensors and motion detectors. The EQMC is constructed with a covered exterior loading dock for the shipment of hazardous waste to an offsite TSDF. The facility manages various sized containers ranging from the small laboratory bottles to 110-gallon containers. The maximum number of 55-gallon containers allowed in the main container storage area is 130 containers (Room 115). Containers are placed one high with a three-foot buffer between containers and the walls. Small containers are stored on container storage racks. Marking and labeling of small containers is conducted using the hazardous waste E-TRAX waste card attached to the container or an E-TRAX waste card placed inside a plastic bag that is labeled as "Hazardous Waste" along with the indication of the characteristic of the waste.

The permitted storage building consists of areas described by the types of waste storage. Each area has a coated floor that is sloped to a no-discharge concrete collection trench and surrounded by a concrete curb serving as a secondary containment. The areas in the EQMC are as follows:

- Receiving Area;
- Cylinder Cutting/Drum Crushing (117B);
- Emergency Response Supplies (117C);
- General Maintenance (117F);
- Acid Storage (117G);
- Non-Hazardous Storage/Chemical Redistribution/Recycling (117M);
- Non-Hazardous Storage (117L);
- Metals Storage (117K);
- Cyanides/Base Storage (117J)-cyanides and bases are stored separately;
- X-RAD Storage (117H)- mixed waste is stored more than one year-radiation regulations take precedence;
- Oxidizer Storage (112);
- Mechanical Room (113)-EQMC does not have access to this room. The door to the room is located on the outside of the building and is used by Facilities Management;
- Gas Cylinder Storage (114);
- Flammable Storage (115);
- Bulking Room (120);
- Treatment Room (118)- acid neutralization and oxidizer reduction;
- Reactive Storage (119)-organic peroxides, flammable solids, water reactive material, pyrophoric material, shock sensitive material and D003 storage;
- Non-Organics/Used Oil/Poisons/PCBs/Biohazardous Storage (117D); and
- Drum Storage (117E)-empty drums storage.

Waste shipments are sent offsite approximately quarterly, and personnel track the storage area container inventory by recording the date waste was received and removed from the storage area in the E-TRAX system. Larger shipments of waste are conducted twice a year in June and December when the university conducts laboratory cleanouts. All containers in storage were closed, labeled and in good condition.

Several routine operations occur during the handling of hazardous waste at the permitted storage facility prior to shipment to another TSDF. These routine operations consist of:

- Adding absorbents to containers.
- Lab packing of waste.
- Neutralization of caustics and acids.
- Bulking of compatible materials into larger containers.
- Stabilization of reactive wastes.

Most of the hazardous waste generated at UK's campus is generated in laboratories and accumulated in containers that are 5 gallons or less. When a container becomes full at a satellite accumulation area (SAA), a trained staff person from the laboratory who is in control of the container, fills out an electronic waste pickup request form. EQMC staff reviews the waste information for accuracy and the information on the waste is entered into a hazardous waste tracking system (E-TRAX). The E-TRAX system then generates a "waste ticket" to be physically attached to the waste container. Each waste ticket includes the following information: ticket number; name of the person created the ticket, accumulation start date, location (building, room); waste profile; and container size. Responsible personnel at each satellite accumulation area must complete an online hazardous waste training to be granted access to the E-TRAX system. The system will automatically deny access if an individual's annual training expires.

EQMC staff is responsible for transferring hazardous waste from numerous SAAs (approximately 850+ labs), and the 90-day central accumulation area (CAA) located in the Jacobs Science Center to the RCRA permitted storage area daily. The CAA is used to manage hazardous waste generated in the teaching laboratories located in the Jacobs Science Center. Universal waste at the university is primarily managed by the UK's Recycling Center.

This inspection included the EQMC permitted facility, the Plant Science Building and the Jacobs Science Center.

Previous Inspection History

University was last inspected by KDEP and by EPA in August 2023. There were four violations identified during the inspection involving container management and failure to make proper waste determination. The facility returned to compliance on September 14, 2023.

9) Opening Conference

On July 31, 2024, EPA inspector Raj Aiyar, accompanied by KYDEP inspector Amy McCracken arrived at approximately 9:00 a.m. at the facility, Brian Butler and Lee Faulkner with UK Environmental Management received the inspectors. The inspectors introduced themselves, showed their credentials and explained the purpose of the visit.

The inspectors were led into a conference room for having an opening conference. Maridely Loyselle, Compliance Officer with UK Environmental Management joined us over the phone for the opening conference. The inspectors discussed the scope of the inspection, the anticipated

use of equipment, a digital camera and requested for a list of records to be reviewed as part of the inspection.

The EPA inspector explained that the Small Business Regulatory Enforcement Fairness Act's classification of a "small business" is generally set by the Small Business Administration using the business' SIC/NAICS code and annual receipts or number of employees. A copy of the EPA's information sheet for small businesses can be found at <https://www.epa.gov/sites/production/files/2017-06/documents/smallbusinessinfo.pdf>.

The EPA inspector also discussed the facility's ability, pursuant to 40 C.F.R. § 2.203, to assert a business confidentiality claim for information submitted to EPA. The company did not assert a business confidentiality claim.

Brian Butler provided an overview of the facility's history and current operations during the opening conference. The inspection participants also discussed health and safety protocols and the required personal protective equipment before Brian Butler and Lee Faulkner led the inspectors on a tour of the facility's operations.

10) **Inspection Observations**

EQMC

Acid Storage

EQMC manages a permitted storage area for managing hazardous waste acid (D002) that are generated by the university labs (Photo-1). The acid waste comprises of organic and inorganic waste are stored in storage racks. According to Brian Butler, all acid waste that are 5-gallons or less are lab-packed for off-site disposal. Limited neutralization is conducted as required in this area. All containers including small vials and bottles ranging in size from 10 milliliter (ml) to 1-gallons were observed to be placed in a tray serving as a secondary containment. All the containers were observed to be closed, labeled with the words "Hazardous Waste" and with indication of the hazards of the contents, waste codes and an accumulation start date. There was no leaks and spills observed in this area.

Base/Alkaline Storage

EQMC manages a permitted storage area for managing hazardous alkaline (D002) waste that are generated by the university research labs (Photo-2). The base wastes are stored in storage racks. According to Brian Butler, all alkaline waste that are 5-gallons or less are lab-packed for off-site disposal. Basic neutralization is conducted as required in this area. All containers including small vials and bottles ranging in size from 10 milliliter (ml) to 1-gallons were observed to be placed in a tray serving as a secondary containment. All the containers were observed to be closed, labeled with the words "Hazardous Waste" and with indication of the hazards of the contents, waste codes and an accumulation start date. There was no leaks and spills observed in this area. According to Brian Butler, the University has recently started a Chemical Upcycling program for the purpose of waste minimization.

Metals Storage

EQMC manages a permitted storage area in the Metals Storage for managing hazardous waste metals that are generated by the university research labs (Photo-3). The inspectors observed four 55-gallon closed containers in this area. Two 55-gallon containers were labeled as non-RCRA regulated waste and the other two 55-gallon containers were labeled with the words “Hazardous Waste” and with indication of the hazards of the contents, waste codes and an accumulation start date. There were no leaks and spills observed in this area.

Oxidizer Storage

EQMC manages a permitted storage area in the Oxidizer Storage for managing hazardous waste oxidizers (D003) that are generated by the university research labs (Photo-4). The inspectors observed 10 ml to one-gallon waste containers shelved on metal racks and one 5-gallon pail containing hazardous waste stored in this area. All the containers were observed to be closed, labeled with the words “Hazardous Waste”; indications of the hazards of the contents, waste codes and an accumulation start date.

Gas Cylinder Storage

EQMC manages a permitted storage area for storing hazardous waste compressed gas cylinders. The inspectors observed two spent 4-foot cylinders stored in this area. The waste cylinders were located inside a box container. The cylinders were equipped with pressure cap lids, which were closed. The cylinders were labeled with the words “Hazardous Waste” and with indication of the hazards of the contents and an accumulation start date.

Flammables Storage

EQMC manages a permitted storage area in the Flammable Storage for managing flammable (D001) hazardous waste generated by university research labs. The inspectors observed four 30-gallon hazardous waste containers; eleven 55-gallon hazardous waste containers; two 5-gallon and four 55-gallon Non-RCRA Regulated waste containers; two 55-gallon used oil containers; one 55-gallon container containing nonhazardous waste (silica gel) and one 55-gallon universal waste container (Photo-5). The inspectors also observed three shelving units containing waste waiting to be lab packed (Photo-6). All the containers were observed to be closed, labeled with the words “Hazardous Waste”; indications of the hazards of the contents, waste codes and an accumulation start date. The accumulation start date on the 55-gallon universal waste container was observed to be May 2024. There were no leaks and spills observed in this area.

Bulking

EQMC manages a permitted storage area in the Bulking room for bulking hazardous waste generated by university research labs. According to Maridely Loyselle, although bulking is conducted, all applicable waste codes are retained. Typical waste activities in the Bulking area include bulking of used oil, waste flammable liquid and conducting Toxic Characteristic Leaching Procedure (TCLP). The inspectors observed three 55-gallon toxic (D004) waste containers; one

30-gallon and five 5-gallon hazardous waste containers and several empty containers (Photo-7). All the hazardous waste containers were observed to be closed, labeled with the words "Hazardous Waste"; indications of the hazards of the contents, waste codes and an accumulation start date. There were no leaks and spills observed in this area.

Neutralization Room

There was no hazardous waste stored in this room at the time of inspection.

Reactive Storage

EQMC manages a permitted storage area in the Reactives Storage for managing reactive (D003) waste that is generated by university research labs. The inspectors observed lab-packs in this storage. There were several containers in various sizes ranging from 100-milliliter container to 500-milliliter container waiting to be lab packed (Photo-8). The containers were staged on metal racks. The containers were equipped with sealable lids, which were closed. All the hazardous waste containers were observed to be closed, labeled with the words "Hazardous Waste"; indications of the hazards of the contents, waste codes and an accumulation start date. There were no leaks and spills observed in this area.

Plant Science Building

EQMC manages several Satellite Accumulation Areas (SAAs) in the research and teaching labs within the University campus including the Plant Science Building.

Room 113

The inspectors observed several SAAs in this room. There were several SAA containers of various sizes (one liter, one-gallon and five-gallon containers) used for storing hazardous waste. All the SAA containers were observed to be closed, labeled with the words "Hazardous Waste" and with indications of the hazards of the contents (Photo-9). There were no leaks or spills observed near the SAA container.

Room 452 (Seed Biology)

The inspectors observed one 5-gallon SAA container in secondary containment. The SAA container was observed to be closed, labeled with the words "Hazardous Waste" and indications of the hazards of the contents. There were no leaks or spills observed near the SAA container.

Room 448 (Plant Growth Room)

The inspectors observed one 5-gallon and one 2.5-liter closed containers in secondary containment. Both the containers were labeled as "Used Oil". There were no leaks or spills observed near the SAA container (Photo-10).

Jacobs Science Building

Central Accumulation Area (CAA)

EQMC manages a hazardous waste CAA. The area is located near a loading dock. The area was identified with a sign which read “danger, hazardous waste storage and No Smoking.” EQMC manages ignitable waste in this CAA. There was no hazardous waste stored in CAA during the inspection.

The CAA is equipped with an internal communications or alarm system capable of providing immediate emergency instruction to facility personnel; it is equipped with a device capable of summoning emergency assistance from local police departments, fire departments, or state or local emergency response teams; it is equipped with portable fire extinguishers, fire control equipment, spill control equipment, and decontamination equipment; and it is equipped with water to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray system.

11) Records Review

Once the inspectors completed the walkthrough of the facility, the inspectors were escorted to a conference room to conduct a review of the required documentation. The records reviewed for a three-year period included the following:

- Hazardous Waste Management Facility Permit
- 2023 Waste Minimization Plan
- Training Records
- Contingency Plan and Quick Reference Guide
- Weekly Inspection Logs the CAAs
- Waste Manifest-2023 till Present
- Documents showing emergency arrangement with local authorities
- Monthly Inspection Records for EQMS- Security Alarms, PPE and HVAC Systems

There were no deficiencies observed during the records review.

12) Closing Conference

An exit briefing was conducted at the conclusion of the inspection. Brian Butler, Lee Faulkner, Maridely Loyselle, Amy McCracken, KYDEP and Raj Aiyar, US EPA participated during the exit briefing. The observations made during the inspection were discussed and the inspection was concluded.

13) List of Appendices

Appendix 1 – Photo Log:

14) **Signed**

RAJAGOPAL AIYAR Digitally signed by RAJAGOPAL
AIYAR
Date: 2024.09.18 14:29:05 -04'00'

Raj Aiyar
Environmental Engineer

15) **Concurrence**

ARACELI CHAVEZ Digitally signed by ARACELI
CHAVEZ
Date: 2024.09.19 12:16:57 -04'00'

Araceli B. Chavez
RCRA Enforcement Section

Appendix 1 – Photo Log

Photos taken on July 31, 2024

Photos provided by: KDEP



Photo-1 EQMC- Acid Storage Area



Photo-2 EQMC- Bases



Photo-3 EQMC-Metals



Photo-4 EQMC-Oxidizers



Photo-5 EQMC-Flammable



Photo-6 EQMC-Flammable



Photo-7 EQMC-Bulking



Photo-8 EQMC-Reactive



Photo-9 Plant Science Building-Lab 113



Photo-10 Plant Science Building - Lab 448