

RCRA Inspection Report

1) Inspector and Author of the Report

Raj Aiyar
Environmental Engineer
U.S. Environmental Protection Agency, Region 4
RCRA Enforcement Section
Chemical Safety and Land Enforcement Branch
Resource Compliance Assurance Division
61 Forsyth Street, SW
Atlanta, Georgia 30303
(404) 562-8993

2) Facility Information

University of Kentucky (UK)
355 Cooper Drive
Lexington, Kentucky 40506-0314
EPA ID No.: KYD000830851

3) Responsible Official

David W. Hibbard, Executive Director - Environmental Health & Safety
Robert D. Kjelland, Director - Environmental Management

4) Survey Participants

Maridely M. Loyselle - Environmental Affairs, UK
Brian Butler, Hazardous Systems Specialist
Charles Lowe, Hazardous Specialist Senior

Inspection Participants

Maridely M. Loyselle, UK
Brian Butler, UK
Charles Lowe, UK
Raj Aiyar, Inspector, US EPA
Heather Jordan, Inspector, KDEP

5) Date of Inspection

August 30, 2022, 9:00 a.m.

6) Applicable Regulations

Sections 3002, 3005 and 3007 of Resource Conservation and Recovery Act (RCRA)
40 Code of Federal Regulations (C.F.R). Parts 260 through 268, 270, 273 and 279

Rules Governing Hazardous Waste Management Title 401 of Kentucky Administrative Regulations (401 K.A.R.) Chapters 30 through 40 and 44 Kentucky Department for Environmental Protection, Hazardous Waste Permit (hereinafter referred to as the “permit”) for the storage and limited on-site treatment of hazardous waste.

Pursuant to 401 KAR 39:080 Section 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(1) [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 [40 C.F.R. § 262.17] (hereinafter referred to as the “LQG Permit Exemption”).

Pursuant to 401 KAR 39:080 Section 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(1) [Section 3005 of RCRA, 42 U.S.C. § 6925], and without complying with 401 KAR 39:080 Section 1 [40 C.F.R. § 262.16(b) or §262.17(a)], except as required in [401 KAR 39:080 Section 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 [40 C.F.R. § 262.15(a)] (hereinafter referred to as the “SAA Permit Exemption”).

Pursuant to 401 KAR 39:080, Sections 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, or lamps, calculated collectively) at any time.

7) Purpose of Inspection

The purpose of this inspection was to conduct an unannounced Resource Conservation and Recovery Act (RCRA) compliance evaluation inspection (CEI) at the University of Kentucky’s (hereinafter referred as “UK”, “university” or “facility”) compliance status with the applicable RCRA regulations and the permit.

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 over 30,000 faculty, staff, and students. 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. 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.

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.

The EQMC is a single-story building which houses 11 container storage areas in which the facility is permitted to store up to 12,600 gallons of liquid and solid wastes, and one container storage area in which the facility is permitted to store up to 10,000 liters of gaseous waste. The facility is also permitted to treat up to 600 gallons of waste per day in two of these container storage areas: bulking up to 500 gallons of hazardous waste per day in Room 120 and conducting bench-scale neutralization and oxidation/reduction on up to 100 gallons of hazardous waste per day in Room 118.

UK'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. UK's non-RCRA regulated wastes include pesticides, asbestos containing materials, non-RCRA pharmaceuticals and used oils.

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.
- Blending/bulking of compatible materials into larger containers.
- Stabilization of reactive wastes.
- Crushing spent scintillation vials.

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 laboratories), 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 Chemistry Physics Building, and the Jacobs Science Center.

9) **Previous Inspection History**

On June 29-30, 2021, the facility was inspected by the EPA and KYDEP. No deficiencies of RCRA were discovered during the inspection.

10) **Findings**

Upon entering the facility, the inspectors met Mr. Kjelland and Ms. Loisel. Ms. Loisel showed their credentials and explained the purpose and scope of the inspection. Facility personnel explained the operations of the facility and escorted the inspectors on a walk-through inspection of the facility.

Environmental Quality Management Center (EQMC)

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 CO2 sensors and motion detectors. EQMC is constructed with a covered exterior loading dock for the shipment of hazardous waste to an offsite Treatment Storage and Disposal Facility (TSDF). The facility manages various sized containers ranging from the small lab 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 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" and the characteristic of the waste (Photos 1-4).

The permitted storage building consists of areas described by the types of waste storage. Each area has a chemical resistant coated floor that is sloped to a concrete collection trench and surrounded by a concrete curb. 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)
- 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 observed to be closed, dated, and labeled with hazard indication. There was adequate aisle space in the storage area. There were no leaks or spills observed during the inspection.

Chemistry Physics Building (#0055):

The Chemistry Physics (CP) Building houses teaching and research labs. Labs inspected included CP 8, CP 34, CP 245, and CP 244.

CP 8

Lab CP 8 is a research chemistry lab (Photos 5-7). The University failed to make waste determinations on unmarked containers of various sizes including lab glass wares, bottles, and plastic containers and by looking at their conditions appears to be discarded or unused. Containers and glassware had corroded lids, rusted, expired, leaking and in poor condition.

Pursuant to KRS 224.46-510(2) (2006) and 401 K.A.R. 31:010 Section 2 (2006) [40 C.F.R. § 262.11], a person who generates a solid waste, as defined in KRS 224.46-510(2) (2006) and 401 K.A.R. 31:010 Section 2 (2006) [40 C.F.R. § 261.2], must make an accurate determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations articulated in KRS 224.46-510(2) (2006) and 401 K.A.R. 31:010 Section 2 (2006) [40 C.F.R. § 262.11].

Several containers in the various satellite accumulation areas (SAAs) in the lab were not closed or labeled with hazard indication. Containers were also found to be in bad condition.

Pursuant to 401 KAR 39:080, 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(1) [Section 3005 of RCRA, 42 U.S.C. § 6925], and without complying with 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.16(b) or §262.17(a)], 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. § 262.15(a)(4)], which is a condition of the SAA Permit Exemption, a generator is required to keep containers of hazardous waste closed at all times during accumulation, except when adding, removing, or consolidating waste; or when temporary venting of a container is necessary for the proper operation of equipment, or to prevent dangerous situations, such as build-up of extreme pressure.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)(1)], which is a condition of the SAA Permit Exemption, if a container holding hazardous waste is not in good condition, or if it begins to leak, the generator must immediately transfer the hazardous waste from this container to a container that is in good condition, or immediately transfer and manage the waste in a central accumulation area operated in compliance with the applicable requirements.

The lab was operated in a way that did not minimize the possibility of fire, explosion, or spills. Inspectors observed very poor housekeeping in the lab.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.17(a)(6)], which incorporates 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.251], and is a condition of the LQG Permit Exemption, a generator is required to maintain and operate its facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

The University provided the KDEP with documentation of corrective actions taken after the inspection. The document was received on September 14, 2022.

CP 34

CP 34 is a research chemistry lab (Photos 8-14). The University failed to make waste determinations on unmarked containers of various sizes including lab glass wares, bottles, and plastic containers and by looking at their conditions appear to be discarded or unused. Containers and glassware had corroded lids, rusted, expired, leaking and in poor condition.

Pursuant to KRS 224.46-510(2) (2006) and 401 K.A.R. 31:010 Section 2 (2006) [40 C.F.R. § 262.11], a person who generates a solid waste, as defined in KRS 224.46-510(2) (2006) and 401 K.A.R. 31:010 Section 2 (2006) [40 C.F.R. § 261.2], must make an accurate

determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations articulated in KRS 224.46-510(2) (2006) and 401 K.A.R. 31:010 Section 2 (2006) [40 C.F.R. § 262.11].

Several containers in the various satellite accumulation areas (SAAs) in the lab were not closed or labeled with hazard indication. Containers were also found to be in bad condition.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)(4)], which is a condition of the SAA Permit Exemption, a generator is required to keep containers of hazardous waste closed at all times during accumulation, except when adding, removing, or consolidating waste; or when temporary venting of a container is necessary for the proper operation of equipment, or to prevent dangerous situations, such as build-up of extreme pressure.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)(1)], which is a condition of the SAA Permit Exemption, if a container holding hazardous waste is not in good condition, or if it begins to leak, the generator must immediately transfer the hazardous waste from this container to a container that is in good condition, or immediately transfer and manage the waste in a central accumulation area operated in compliance with the applicable requirements.

The lab was operated in a way that did not minimize the possibility of fire, explosion, or spills. Inspectors observed very poor housekeeping in the lab.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.17(a)(6)], which incorporates 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.251], and is a condition of the LQG Permit Exemption, a generator is required to maintain and operate its facility to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

The University provided the KDEP with documentation of corrective actions taken after the inspection. The document was received on September 14, 2022.

CP 245

CP 245 is a research chemistry lab (Photos 15-17). Multiple containers in the satellite accumulation areas were not labeled with the words “Hazardous Waste”. There was no indication of hazards of the contents. Containers were also found to be in bad condition.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)(4)], which is a condition of the SAA Permit Exemption, a generator is required to keep containers of hazardous waste closed at all times during accumulation, except when adding, removing, or consolidating waste; or when temporary venting of a container is necessary for the proper operation of equipment, or to prevent dangerous situations, such as build-up of extreme pressure.

Pursuant to 401 KAR 39:080, Section 1(1) [40 C.F.R. § 262.15(a)(1)], which is a condition of the SAA Permit Exemption, if a container holding hazardous waste is not in good condition, or if it begins to leak, the generator must immediately transfer the hazardous

waste from this container to a container that is in good condition, or immediately transfer and manage the waste in a central accumulation area operated in compliance with the applicable requirements.

The University provided the KDEP with documentation of corrective actions taken after the inspection. The document was received on September 14, 2022.

CP 244

CP 244 is a research lab (Photo 18). No violations were observed in this lab.

Jacobs Science Building-Central Accumulation Area (CAA)

UK manages a less than 90-day CAA in the Jacobs Science Building (Room 199E). The area is a locked storage room with a sloped entrance and a bermed concrete floor. The area is equipped with a fire alarm and fire extinguisher. Waste containers are stored on four sets of shelves which are equipped with small trays for catching potential leaks or spills from waste containers. There was no hazardous waste in the CAA at the time of the inspection. Inspectors reviewed the weekly inspection log for the CAA for 2022. There was no deficiency observed in this area.

Records Review

RCRA Permit, Part A Permit Application and Part B Permit Application

The documents are maintained at the facility.

Hazardous Waste Manifests

Manifests for the shipment of hazardous wastes are maintained at the facility. Manifests were reviewed since the last inspection from 2021 to Present. The manifests included signed copies from the designated facilities and land disposal notification. The facility was using the following as transporters and disposal facilities at the time of inspection: Veolia Transportation (OKR000031402), Basin Transportation (OKR00031492), Veolia Technical Solutions (NJD080631369); Veolia Technical Solution (OHD004045209), Veolia ES Technical Solution (TXD000838806).

Contingency Plan

The contingency plan (CP) is maintained at the facility. The CP includes emergency procedures, evacuation procedures, site maps, and evacuation routes. The plan lists local authorities (fire, police, and hospital), communications equipment, fire control equipment and PPE. Robert Kjelland is listed as the primary emergency coordinator.

Arrangements with Local Authorities

UK has arrangements with the local authorities and an emergency response contractor and equipment supplier.

RCRA Permitted Container Inspection Records

Inspectors reviewed the monthly inspection records for the permitted facility from 2021 to present. A monthly inspection is conducted on emergency equipment consisting of; eyewash and overhead shower safety system, fire extinguishers, alarms, CO₂ system, combustible gas detectors, self-contained breathing apparatus, and first aid kits. Inspectors reviewed the weekly inspection records for the permitted facility for the past year. A weekly inspection is conducted on personnel protective equipment, absorbent material, doors, emergency lighting, warning signs, communication systems and the HVAC panel.

Inspectors reviewed the daily container inspection records for the permitted facility. A daily inspection is conducted on the storage requirements for containers and the storage areas and rooms.

90-day or Less Accumulation Weekly Container Inspection Records

Inspectors reviewed the weekly container inspection records for the past year.

Personnel Training

The RCRA training records are maintained at the facility and were reviewed for completeness. The records consist of employee job titles, job descriptions, training certificates, and a chronology of the RCRA training provided.

Hazardous Waste Annual Report

The annual report is maintained at the facility.

Hazardous Waste Minimization Plan (The Plan)

The Plan is maintained at the facility.

The records were observed to be complete.

11) Out-briefing

A closing conference was conducted at the end of the inspection. Mr. Hibbard, Mr. Kjelland and Ms. Loyselle participated during the closing conference. The observations made during the inspection and the next steps following the inspection were discussed and the inspection was concluded.

12) Signed

RAJAGOPAL AIYAR Digitally signed by RAJAGOPAL AIYAR
Date: 2022.10.12 13:52:26 -04'00'

Raj Aiyar, Inspector

Date

13) **Concurrence**

ARACELI CHAVEZ Digitally signed by ARACELI CHAVEZ
Date: 2022.10.12 16:19:51 -04'00'

Araceli B. Chavez
Chief
RCRA Enforcement Section

Date

ATTACHMENT A

University of Kentucky - Main Campus

Lexington, Kentucky

COMPLIANCE EVALUATION PICTURES

KYD 000 830 851

August 30, 2022

Photos taken by Raj Aiyar

Camera Type: Samsung WB250F

EPA Tag Number: S75912



Photo-1 EQMC –Permitted Hazardous Waste Storage (Inorganic)

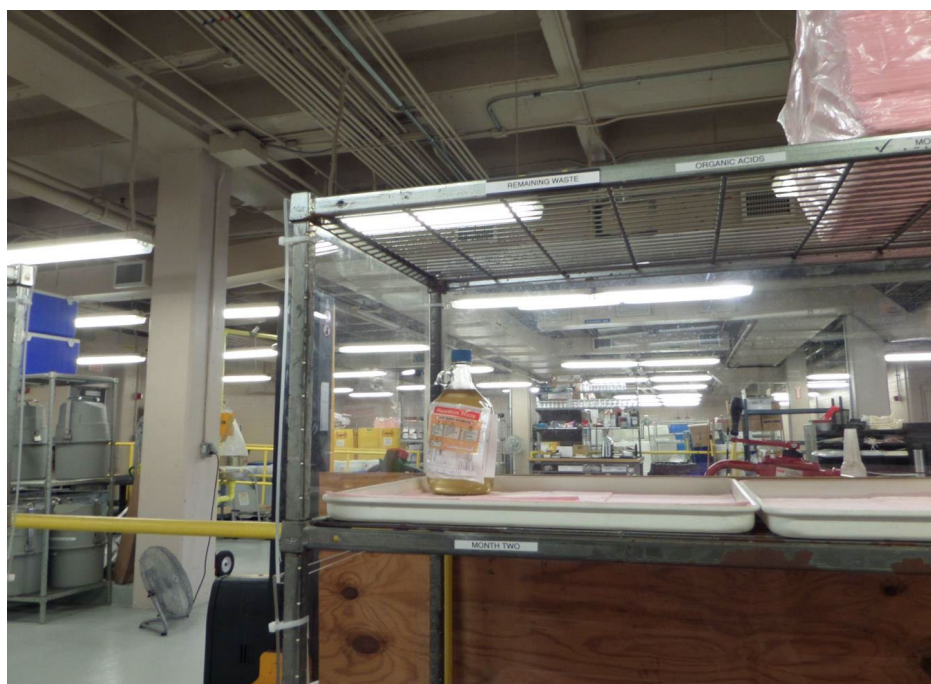


Photo-2 EQMC –Permitted Hazardous Waste Storage (Organic Acid)



Photo-3 EQMC –Permitted Hazardous Waste Storage (Base)



Photo-4 EQMC – Permitted Hazardous Waste Storage (Bulking Room)

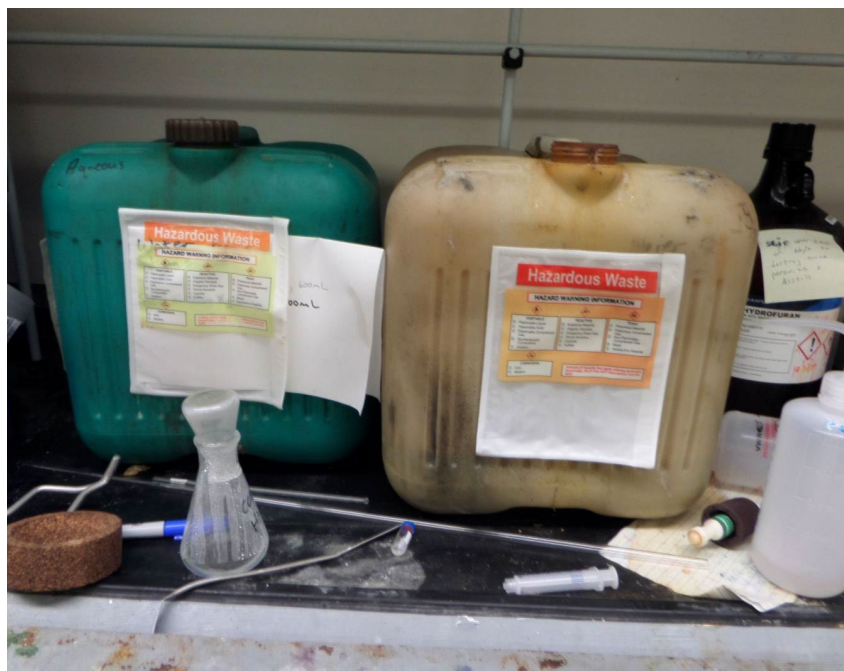


Photo-5 Chemistry Physics Building – CP8
No Indication of Hazard



Photo-6 Chemistry Physics Building – CP8
Open SAA Container



Photo-7 Chemistry Physics Building – CP8
Indication of hazards of contents not marked



Photo-8 Chemistry Physics Building – CP34
Indication of hazards of contents not marked, Containers in bad condition
Discarded and Expired Chemicals, Stains on the Countertop



Photo-9 Chemistry Physics Building – CP34
Failure to make waste determination, Containers in bad condition
Discarded and Expired Chemicals, Stains on the Countertop



Photo-10 Chemistry Physics Building – CP34
Indication of hazards of contents not marked, Container in bad condition



Photo-11 Chemistry Physics Building – CP34
Indication of hazards of contents not marked, Spilled Contents, Expired chemicals, Containers in bad condition



Photo-12 Chemistry Physics Building – CP34
Open Container with unknown liquid



Photo-13 Chemistry Physics Building – CP34
Container in poor condition, Stains on the countertop



Photo-14 Chemistry Physics Building – CP34
Open Hazardous Waste Container



Photo-15 Chemistry Physics Building – CP245

- Container in bad condition
- Containers not labeled



Photo-16 Chemistry Physics Building – CP245

- Container in poor condition
- Containers not labeled



Photo-17 Chemistry Physics Building – CP245
•Indication of hazards not marked



Photo-18 Chemistry Physics Building – CP244